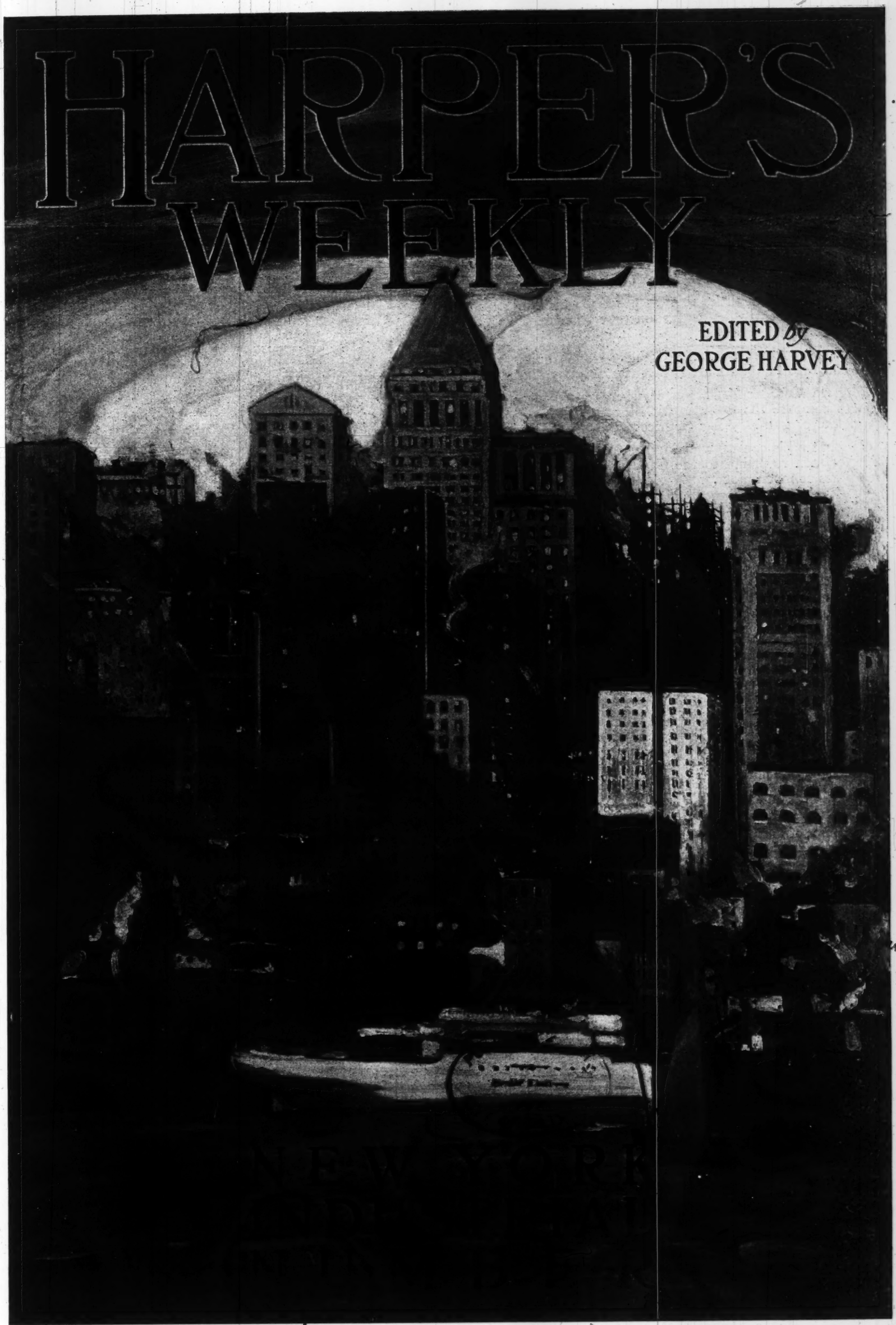
HARPER'S WEEKLY

EDITED by
GEORGE HARVEY



MAR 23 1912

March 23 1912 HARPER & BROTHERS, N. Y. Price 10 Cents

Why the whole World pays tribute to the Cadillac

What is the source of that mysterious enthusiasm which makes everyone speak in superlative terms of the Cadillac?

What peculiar qualities does it possess, which impel the public to dismiss impatiently the suggestion that other cars are "as good as the Cadillac"?

What advantages does the Cadillac owner enjoy, day by day, which convince him that his is incontestably the better car?

Why do Cadillac dealers everywhere encounter a lively disposition to compare the Cadillac with the costliest cars; but not with cars of like or half-way higher price?

On what basis can we explain the phenomena, encountered everywhere, of men reverting to the Cadillac, from cars costing two and three times as much money?

The Primal Cause of Cadillac Efficiency

The subject is a big one; it cannot be compassed in a brief advertisement.

But the source of Cadillac satisfaction can be indicated.

We can trace the cause; and we can partially picture the effect.

Let us take, merely as an example, separating it from all the rest—one, big, little fact.

Every Cadillac piston and every Cadillac cylinder is interchangeable with every other Cadillac piston; and every other Cadillac cylinder.

More than 400 essentially accurate dimensions in Cadillac parts are measured down to one one-thousandth of an inch.

Johannson of Eskelstuna, Sweden, is the inventor of the most wonderful system of limit gauges for infinitesimally fine measurements the world has ever seen—gauges which are accurate to the one ten-thousandth part of an inch.

The Cadillac Company is, and has been for years, the world's foremost exponent of its own; and of the Johannson system.

Cadillac adherence to unexampled accuracy antedates the Johannson discovery. It goes back forty years to its inception—ten years, in its application to the Cadillac car.

So here you have the primal cause—the source of that world-wide, mysterious, Cadillac enthusiasm—the despair of cars which may look like, but are not like the Cadillac; because they have not wrapped up in them the fervor and the lifetime devotion inspired by an ideal.

Effects which follow the Primal Cause

And now as to the effect.

How is the inherent difference of the Cadillac expressed in its outward behavior—how does it differ and how does it surpass?

In a hundred ways; some of them intangible, but ever-present; many of them intensely practical—things you can see and feel and know.

The first fruit of fine measurement and perfect alignment is, of course, the reduction of friction to the closest possible approach to a theoretical zero.

Friction is the worst and most relentless enemy to efficient service in a motor car.

The defeat of this relentless enemy can be accomplished by no other weapon known to motor car manufacture than the most scrupulous and properly applied standardization.

Once accomplished, it carries in its train two other splendid victories.

Wear, tear and repair are the evil offsprings of friction.

And when friction is reduced to a minimum, their capacity for discomfort and danger and damage is almost totally nullified.

At one and the same time, and from the same source, another splendid benefit is conferred upon the car.

Elimination of friction means extraordinary ease of operation.

It achieves that luxurious evenness which is supposed to be one of the chief characteristics in cars of the highest price; and the cardinal quality for which men are willing to pay that high price.

These extraordinary requisites—reduction of wear, tear and repair, and running qualities of velvety smoothness—are the distinguished characteristics of a frictionless car.

You have them in the Cadillac, because the Cadillac is the world's foremost exponent of anti-friction methods of measurements.

Cadillac Motor Car Co., Detroit, Mich.

Advantages you may enjoy and Disadvantages you may escape.

The presence or the absence of the qualities described herein—qualities traceable to properly applied standardization and the resulting correct alignment; qualities traceable to skillful design and advanced manufacturing methods and the results of scientific research and development, explain:—

Why the owner of one car has to crank and crank his engine to get it started while the Cadillac owner gets into his car, presses a button, disengages the clutch and his engine starts.

Why the owner of one car, even with a so-called "self-starter" can start the engine only some of the time while the Cadillac electric cranking device is fully as efficient and fully as dependable as every other part of the Cadillac car.

Why the owner of one car must get out—often in the rain and mud—open his lamps, fumble for matches, turn on and regulate the gas and light up while the Cadillac owner without delay or annoyance simply closes the switches and the electric lamps are lighted.

Why one car starts with a jerk and a lunge while the Cadillac can be started off with the smoothness of an ocean liner.

Why in one car about all the driver's strength is required to operate the clutch and brakes while with the Cadillac, slight foot pressure is all that is necessary.

Why in one car the change of gears is accompanied by a crash and a grind while with the Cadillac the change can be made so that it is scarcely perceptible.

Why one car is difficult to keep in the road while the Cadillac seems almost to steer itself.

Why in one car with a steering gear which has no provision for taking up wear, lost motion develops, making steering uncertain and unsafe, while in the Cadillac steering gear the adjustments provided are more adequate than will probably be required.

Why one car rides hard and stiff, the springs seem unyielding and the car is less comfortable to ride in over a paved street than is the Cadillac over an ordinary road.

Why one car may run quietly and smoothly when new but soon becomes noisy and shakes and rattles while the Cadillac often after years of service runs as smoothly as when new.

Why one car runs all right on level roads but when it comes to sand and hills it has not the power to make the pulls while the Cadillac has an abundance of power for all reasonable requirements and with its standardization, the correct alignment and the substantial construction, the maximum of that power is delivered at the rear wheels.

Why one car shows only 8 or 10 miles on a gallon of gasoline while the Cadillac averages 60 to 80 per cent greater mileage.

Why one car after a few months begins to evidence a loss of power while Cadillacs frequently show an improvement.

Why in one car the engine overheats and the water boils while with Cadillac construction and the Cadillac cooling system the causes of overheating are practically eliminated.

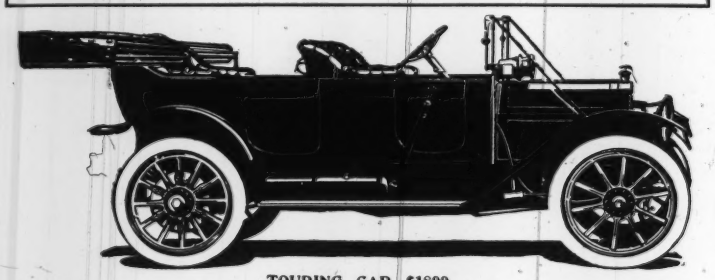
Why one car emits volumes of smoke and it becomes necessary to clean the engine and especially the spark plugs every few weeks, while the Cadillac with its efficient lubricating system and the accurate fit of the cylinders, pistons and rings emits no smoke at all and frequently runs for a year or more without even having a spark plug removed.

Why the oil consumption of one car is from two to four times that of the Cadillac.

Why the owner of one car must be continually tinkering with his car to keep it going while many Cadillac owners rarely open their tool kits.

Why one car after a few months use depreciates in selling value to half of its original cost or less while depreciation in the Cadillac is reduced to an absolute minimum.

So many "Whys" indeed, which evidence the pre-eminence of the Cadillac that we can not here cite even a tenth part of them.



TOURING CAR $1800

Other Models:—Four passenger Phaeton $1800, four passenger Torpedo $1900, two passenger Roadster $1800, four passenger Coupe $2250, seven passenger Limousine $3250.

HARPER'S WEEKLY
A JOURNAL OF CIVILIZATION

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A NEW MASTERPIECE FOR AMERICA

This fine example of the work of Velasquez is one of two portraits for many years in the Villahermosa Palace, now brought to America by Duveen for addition to a private collection. This portrait shows Philip IV. of Spain wearing the Order of the Golden Fleece, and the owners are in possession of a document in the hand of the painter, dated December 4, 1624, in which he acknowledges receipt of payment for it

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EDITED BY GEORGE HARVEY

TWENTY-EIGHT PAGES

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Frederick T. Leigh, Treasurer, Franklin Square, New York, N. Y.

Comment

Psychological

As we go to press, the Colonel is about to make another speech; this time in New York. It will be in all the papers, of course; and we will all look it over from force of habit.

But does it make any real difference what the Colonel says, or what he thinks, or whether he says what he thinks?

Not much, we take it. Nothing that he could say about policies can matter much since he smote the ground with the sword of his mouth at Columbus. Politics no longer has much place in his campaign. It belongs altogether to psychology.

Bonaparte to the Bat

There is no telling what will happen when the massive intellect of CHARLES JOCULAR BONAPARTE begins to oscillate. Just now it is being stirred to its uncalculable depths in an effort to brush away the third-term "myth." It seems that there is no basis for the tradition whatever. WASHINGTON'S renunciation signified nothing, JACKSON retired because he was old and tired, and "no other President could have had a third term if he had wished it."

So runs on the jolly jabberer. The fact that JACKSON, in three messages to Congress, urged the enactment of a specific law prohibiting a third term he overlooks entirely. Possibly he never heard of it. That MADISON probably and MONROE surely could have had a third term but for the existence of the precedent is a fact of which also we may charitably assume he is not aware. Obviously, too, the name of JEFFERSON does not appear in the history on the Corsican mantelpiece. So how could the dear man know that that particular President was beseeched to accept a third *non-consecutive* term and flatly refused to consider for a moment the disregarding of the "salutary example" set by his "illustrious predecessor"?

After all, the source of all things is the Colonel. Listen to this: "ROOSEVELT is the only President who refused a third term avowedly because he thought no President should hold office continuously for more than eight years." Can you beat it? Of course we could not think of questioning the accuracy of the statement. We couldn't. Only God and BONAPARTE knew what ROOSEVELT "thought." The rest of us know only what he said.

Huh! says the Corsican. What does what he said signify except that "his hindsight is better than his foresight"? Besides, "It is at least an open question whether such a promise would not have been contrary to good morals and public policy, and therefore one to be disregarded." It surely is—the openest question ever propounded. Heaven knows we would be the last to prevent the Colonel from coming into contact with good morals. But we respectfully suggest to CHARLES JOCULAR BONAPARTE that he lay down his Machiavelli for a few moments and send out for the loan of a Bible.

But here is the crusher. Even though ROOSEVELT did make the promise, he didn't make it to anybody in particular, "only to the circumambient air"; therefore it is "merely childish" to talk of its having binding force. In this airy fashion the great mind dismisses from consideration the solemn pledge of an American President to the American people.

It is all right. It is what we expected. It sounds the depths of that massive mentality. But here and now we want to warn CHARLES JOCULAR BONAPARTE to take care not to say again that the time came when ROOSEVELT "became convinced that it was his duty to *seek the nomination*." The Colonel won't like that. Here for months he has been dodging and ducking and twisting and squirming to evade the relentlessly pursuing nomination, only to learn at last that his own beloved Attorney-General has not even heard of the great popular uprising, which has swept over the country like a lightning-bug over a potato-patch.

La! la! How bitterer than a drake's quack is the chortle of a chump!

The Last of the "Maine"

The burial of the *Maine* last Saturday was one of the most remarkable naval exhibitions that ever was made. It was a true funeral, melancholy, dignified, and immensely picturesque. Everything about it, and about the proceedings that led up to it, is remarkable. They have all been governed almost entirely by sentiment. To get the *Maine* up out of the harbor of Havana was a costly and very difficult job. It was not necessary. The sunken hulk could have been blown to pieces where she lay. But there was a strong feeling that that was not the way to do it; that an autopsy should be held on the remains of that vessel; that the bones of the dead should be taken out of her; and that if it were possible she should be made to float again, and disposed of as seemed desirable.

And so it has been done. The cofferdam was built, the autopsy was held, and the bones of the dead have been removed; all offers of showmen and relic-hunters have been refused, and finally the historic wreck has gone honorably down to Davy Jones, amid a thunder of salutes, and covered all with roses and a great flag of the United States.

It has been well done. Sentiment did it.

The Recall in the Virginia Mountains

So tragic a matter as the shooting of Judge MASSIE and his court officers at Hillsville, Virginia, makes a bad setting for a smile, but if it were not for that one would smile at the recallers, confronted with this example of their theory carried out in its simplest form. Everybody knows about the mountain people of Virginia and the adjoining States, their isolated communities, feuds, clannishness, and lawlessnesses. The pity of the good judge's death is almost equaled by the pity of his murderers' crime. These mountain people are like children who have run wild, and very like the Highland Scotch as we read of them in SCOTT'S novels. It is an ill task to hunt them down, and a dangerous one, too, but of course there is nothing else to do, and it is being done apparently with proper vigor.

The Supreme Court Divides

How dreadfully untimely! What a political blunder! What a calamity! How can we adherents of the poor old used-up Constitution bear up under it? Here we are trying to defend the courts as the best means to get the law interpreted, and now comes the greatest of them all and divides, four to three, on a question involving the anti-trust law, and the majority stands by the patent laws as having more force and bearing on the case at issue than the anti-trust law has! No wonder the sagacious Associated Press report of the decision intimates that Somebody is going to tell us He told us so.

Well, we should not be surprised; it would be quite of a piece with most of the things told us recently by the same authority. The reasoning would be about the same. As we catch our breath, however, we recall that this is not the first case on which that court has divided closely, and that we really knew of such divisions when we took our stand against the idea of turning the highest and most difficult work of the bench over to our several popular electorates. We get a little more breath and spunk and venture to recall also that once in a while—in fact, quite frequently—those same electorates divide pretty closely themselves. Worse still: they reverse themselves. Really, come to think of it, they display quite a little of this same damning want of infallibility which the courts are charged with. It sounds unbelievable, but even "the people" are occasionally human! Take the people of Maine, for instance. After the election last autumn it was weeks and weeks before we or they knew whether they were for prohibition or against it, so closely had they divided. If there is *any* State, Maine or another, that hasn't also reversed its decision squarely on some public question or other, we never heard of it.

A Complicated Question

And some of these questions have been simple, too. The question before the Supreme Court was not simple. It was difficult and complicated. It was the sort of question on which intelligent and studious men, *if they are sincere and fearless*, will always divide. It was the sort of question which men with untrained minds, possessing no special knowledge of law and history, simply could not *decide* at all. They could only guess at the law and the right of the matter and vote according to other standards than judgment and knowledge—prejudice, for instance, or some prompting of interest.

As the Chief Justice plainly intimated, it was also a question on which the legislature will probably have to take action; and that, too, will be a kind of action we hardly think "the people" could take intelligently if they should take it directly. We hardly believe they could make directly a satisfactory adjustment of all our patent laws and the anti-trust law.

Of course, this is heresy, and very, very wicked. But we can't see it any other way. It's the way we were "raised" to look at it; and we are not going back on our "raising," or on those responsible for it. Among them we might mention the chief writers of *The Federalist*, MADISON and HAMILTON; ABRAHAM LINCOLN; JOHN MARSHALL; and *all* the great liberal statesmen of England from GLADSTONE back to SIMON DE MONTFORT. We can't help it, but we prefer these authorities to that other and earlier advocate of overruling courts, his Majesty King JAMES the Headstrong. In this difficult business of interpreting the law the divine right of royalty looks to us quite as good as any other divine right of the untrained and incompetent to do a kind of work demanding competence and training.

An Unhappy Surmise

Mr. CARNEGIE says that he considers Senator ROOT "the wisest man in America." Is the Laird becoming self-forgetful?

A New York Lady at Lawrence

We spoke last week of the difficulty of getting at the truth of what has been going on in Lawrence. The *Sun*, on Sunday, printed an account of what Mrs. AMOS PINCHOT, of New York, had seen there during an eight-day visit. Mrs. PINCHOT wanted to know what was really doing in Lawrence, and concluded to be her own investigator and reporter. She speaks Italian and French, and has in that the advantage of some investigators. She had, she said, the most interesting eight days she had ever spent. She was greatly impressed and pleased with the people that she saw—the strikers—and much less pleased with the officials and the police. She verified a number of cases of police brutality, and does not doubt that there was much of it, though the reader may conclude that perhaps, all things considered, including the average intelligence of the policemen and the long-continued prevalence of disturbance and perplexity, the brutality cases were not more numerous than might be expected. She approved of the sending of the children out of town. She was astonished at the self-control of the strikers. "Summing up my impressions," she says, "I should say that the most striking feature of the strike itself has been the self-discipline of the strikers." She speaks of the work of the strike in welding together all the people of various nationalities that are employed in the Lawrence mills, and changing their attitude to one another from distrust and hostility to fraternal feeling. She quotes three English strikers as saying:

> This strike is the biggest thing that ever happened to Lawrence. Previously there was class hatred and nationality hatred and religious hatred. The English-speaking people looked down on all the others. Now we are all the best of friends.

She was much impressed with HAYWOOD and his control of audiences, says his meetings were wonderful, and that his continual admonition and that of other leaders was, "We'll never accomplish anything by violence." Having tried violence pretty thoroughly, HAYWOOD ought to know, and it is very interesting to have this testimony that he seems to have profited by experience. Mrs. PINCHOT says nothing about the questions at issue, but throws a great deal of light on that group of the parties to the dispute which most needs to be known and understood.

The I. W. W.

HAYWOOD, in the Lawrence strike, has been the representative of the society of the Industrial Workers of the World, a concern that wakeful persons begin to take notice of. It has extensive ideas; no less, we understand, than to abolish the wage system altogether, and substitute for it the entire profits of industry (and of capital), to be divided ultimately between the immediate industrial producers. The plan in the rough is to band together all the workers in the world, strike from time to time for fifteen per cent. raises in pay, and keep on striking until the strikers get all there is in the business. This is all simple and attractive, and if it is what HAYWOOD told his audiences in Lawrence, it is not to wonder that he held their attention. A prospect of good profits usually holds attention, and as a promiser of profits HAYWOOD seems to have our late fellow-citizen, 520-per-cent. MILLER, hitched in the shade.

The hopes of the I. W. W. are based on the belief that if they can get enough workers to act together they can get anything there is in return for their labor. We guess they can, but the "if" in their proposition has formidable dimensions. We wonder whether HAYWOOD and his friends have ever read about the Tower of Babel. We wonder what the Colonel thinks of their plan, and whether he will let it into his platforms. But meanwhile, and whether its basic theories are sound or not, the I. W. W. is a contemporary force of some moment, and can win or lose a strike here and there, and take hold handily as it has done at Lawrence, anywhere there is industrial trouble and ears erect for counsel and consoling theories. It has the peculiarity of being opposed in theory and practice to all the other members of its family. It laughs at trades-unions and says they won't do; scoffs at the American Federation of Labor; insists that the Socialists haven't the right idea; asks for no new laws or agreements; scorns politics; says, in brief: "Don't worry about us. We'll help ourselves."

So He Is

"He is a man of ideals!" says one of his admirers. We admit both the I and the deals.

The Minimum Wage

We have got a good deal from England, first and last (though not the recall of decisions); perhaps we are to get from her a solution of the labor problem. The pinch of her present coal strike is much too intense to last long. At this writing there are reports that Parliament will settle the strike by making a law to define the minimum wage. The complaint about the minimum wage—apart from its being determined by legislative act—is that all labor tends to sink to it, like water to its level. The man who earns it (or perhaps doesn't) and gets it, objects to the next man's earning any more, whatever his powers may be, and in the end the efficiency of labor suffers another downward jolt.

Suspicious

Our esteemed contemporary *The Engineering and Mining Journal* has a highly interesting article on "Recent Developments in Explosives," but does not give the Colonel even honorable mention. Was this merely an oversight, or further evidence of a dastardly conspiracy to keep Mr. ROOSEVELT out of the public eye?

Distributors, not Producers, at Fault

THOMAS A. EDISON would seem to have won the right to some attention when he talks on a practical question, and he has been talking recently about high prices. Moreover, his main idea is one that has occurred less completely to some of us to whom that question is more practical and pressing than it probably is to Mr. EDISON. It is that the chief trouble lies not with our methods of production, nor with the cost of production, but with our methods of distribution. He points out, what we believe others also have remarked, that in the case of numerous necessaries there is a rise of price, somewhere between the producers and the consumers, of from one hundred to one thousand per cent. That looks too much to him, as it does to most of us, and it is difficult not to agree that there must be something radically wrong about a system of distribution which mulcts the consumer in any such amounts.

Mr. EDISON thinks there are too many distributors, too many retailers, particularly, and wants to get rid of a lot of them; and that, too, looks reasonable as he reasons it. He finds that the more grocers there are in a given town the more that town pays for its groceries—for the obvious reason that the grocers and their families have to live, and the only visible source of their livelihood is the consumers they cater to. They certainly have no way to wring their support out of the producers and wholesalers of their commodities, and the only other way conceivable is to get it out of their customers in higher prices.

That combinations and gentlemen's agreements are not unknown to retailers, particularly in small towns and cities, has for some time been pretty obvious. Possibly Mr. EDISON overestimates the prevalence and effect of such things, but when they are taken with our long-known abuses in transportation and other "middle-man" processes, his theory is bound to command respect. Undoubtedly there *is* a lot the matter with the way all sorts of things are distributed, and Mr. EDISON may well be right in predicting that a big change in this regard is coming. He points out, too, another positive improvement to be expected from such a change: the middlemen, the distributors, who will be put out of business by it, will still have to live, and the odds are that most of them will become producers in some fashion, and thus still further enhance the benefit to consumers—and to the country. Some of the ways in which the change may be wrought—in which it is, in fact, already being wrought—Mr. EDISON mentions. There are already a good many devices to bring producer and consumer closer together. We suspect the parcels post is going to prove one of the chief of them, though Mr. EDISON doesn't mention it. He does not, indeed, announce any complete scheme of the revolution: but that is hardly a good reason for disregarding his views. That is a matter for the inventive faculty to work on—and it is EDISON who is talking.

Get Them Together

His hat's in the ring, and Mrs. PANKHURST'S brick is in the window. Why not get the brick and put it in the hat, and set apart April 1st as a day of rejoicing and international sympathy?

To Improve the Foreign Service

Mr. SULZER'S bill "for the improvement of the foreign service," introduced in the House on February 13th, is one in which readers of the WEEKLY are likely to be interested, and will perhaps join us in urging upon the attention of Congress. By the reorganization act of 1906 Congress classified the posts of the consular service in nine grades of consulates and six grades of consulates-general, abolished compensation by fees, substituting salaries ranging from $2,000 to $12,000, and provided a corps of five consular inspectors who inspect every post at intervals of two years.

This bill was good as far as it went, but made no provision for appointments to the service or tenure in office. In June, 1906, President ROOSEVELT, by an Executive order, promulgated regulations for admission to the consular service which have had the effect of making it a civil service in fact as well as in name. President TAFT has not disturbed this order, and under it appointments to the service are now made after careful examination of the candidates. If successful, they are appointed to a Class 8 or Class 9 consulate (posts carrying salaries of $2,500 and $2,000, respectively). All vacancies in posts of higher grades are filled by promotion from the ranks. Political affiliations are not considered.

This method of manning the cousular service has had excellent results, but it is liable to be upset at any time by Executive order, and Mr. SULZER'S bill aims to give it permanence by legislative enactment. Training and experience are very valuable in consuls, and efficient consuls are considerably and increasingly valuable to American trade. If capable men are to continue to be attracted to that service, it must be made to offer them a career as secure as is offered in the army or the navy. If Congress takes such action as Mr. SULZER'S bill invites, that end will be considerably furthered on its way toward attainment.

Why not Stubbs?

Why don't they run STUBBS of Kansas?

STUBBS is an honest patriot, stands hard for everything the progressives want. and understands as much as a progressive candidate could understand with any comfort.

The Tone of the Campaign

It is easy to argue that the tone of political discussion is lower than it used to be, and it is easy to argue the contrary. One can go back into the past and find things to match pretty nearly anything that nowadays looks particularly cheap and meretricious or brutal and vulgar; or one can, by a partial selection of one's instances, make either period look worse than the other.

Still, the tone of political discussion does vary. It was certainly higher in Revolutionary times in this country than it has often been since. The Senate of WEBSTER'S and CALHOUN'S time certainly heard more dignified and noble oratory than the Senate hears now. People in general took the great debates over slavery and secession in a more highly serious mood than they had taken things in JACKSON'S "reign," or than they seem to be taking the present fight for the Presidency. No doubt the clearness and urgency of a single great issue was then, as in our beginnings, a cause of this mood. But at any rate the present campaign, so far as it has gone, does not strike most of us as a particularly elevating intellectual exercise.

There are other causes than the lack of a clearly predominating and highly serious issue to account for this. There is the yellow press, for instance, with its constant search for the personal and the sensational, and there is the general usage of our newspapers, even those that are not yellow, in giving too little space to the essentials, and too much to the superfluities, of all our public controversies. There is the absorption of so many of our best minds in business, and there are the unedifying diversions and dissipations, too lush fruit of our prosperity, which absorb too many other minds. There is our morbid curiosity—there is no other phrase for it—for unilluminating detail and incident, fostered and fed by our unequaled means and agents of publicity. There is our very large ignorant vote, much of it but by no means all of it imported, which the politicians, no doubt the best judges, do not seem to think it possible to reach and move merely by honest and dignified argument of public questions.

The Worst Offenders

All these things count, undoubtedly. They all make more or less strongly against dignity and pertinence and elevation in our public discussions. But they are not sufficient, all together, to excuse our public men who habitually lower rather than raise the tone of our politics by appealing to the lower rather than the higher nature of the public they seek to lead.

An honorable exception will make plainer the offense and more conspicuous the chief offenders. President TAFT'S Toledo speech was a perfectly fair and dignified discussion of Colonel ROOSEVELT'S proposals about the judiciary, and all the more creditable because the main proposal was, as he remarked, so extraordinary and crude that it was difficult to consider it seriously at all.

Chicago University Takes a Spurt

Plans have been announced that betoken an important and somewhat adventurous reorganization of the University of Chicago. President JUDSON wants to get his young men out of college earlier. He thinks they should graduate at twenty. To compass this he proposes to cut two years off from the elementary-school system and create a new academic institution, the Junior College. Two years in that, and two more years in the university, are to complete requirements for the bachelor's degree.

Here is another change of mechanism, and very likely a good one, instigated probably by recent searching criticism of our colleges and their work. But mechanism can only do about so much for education. True education remains very much as it was when JAMES A. GARFIELD the elder gave as his notion of a good college—"MARK HOPKINS sitting on the other end of a log."

Who Is It?

It is a good Calvinistic divine who calls our attention to two lines from TENNYSON'S poem, "A Character":

> Himself unto himself he sold,
> Upon himself himself did feed.

Our reverend correspondent seems to think that just now they have some sort of political relevance or application.

Now whom could he possibly mean? We should really like to know, but we do *not* offer any cash premiums for correct answers.

Poor Transit Facilities

The attention of the good-roads people is called to the bad state of the roads at the south pole. Travel is pressing in there. Danes, Englishmen, Japanese, and other folks are crowding to the pole, but the going's bad.

Slanderous

We know a man who calls him ME-ODORÉ!

Memory

IT is SPENCER who tells us that instinct is but organized memory and memory again but incipient instinct. Out of the abysm of vague, half-conscious recollection one takes precaution, and this result one names instinct; again, the exercise of remembering is the recall of registered judgments out of which instinct is born. If we fear the fire, it is because we remember the sensation of burning; if we run full tilt toward a new experience or burgeoning emotion, it is that somewhere in the blood is registered an eagerness or exultation experienced in other days by ourselves or our ancestors. Who knows how many "burnt-out passions, fears, and sorrows" live anew in every vital impulse of our lives? Certain it is that no man living is just himself, alone and separate, but is the residue handed down of many and many an ancestral impulse and performance. What wonder, with these myriad creatures fighting in us for supremacy, that we fail sometimes to keep our own appointed track?

It is memory, however, that gives us our only sense of identity. However grown and changed and different beyond recognition we are to-day, we somehow feel that the same soul has been registering judgments upon the same body these threes ore years and ten. It is memory that takes the responsibility of our accumulation of facts and conclusions and makes itself the very foundation of our future life.

Is genius anything but memory, one wonders? PLATO attributed all knowledge to reminiscence, not to investigation. When in the most passive moments of our lives there flash upon us the clue and answer to a mystery with which we have struggled in vain, consulting all the doctors of learning and ages of thought, it seems as if all one had to do was to go softly and listen hard. Somewhere blown on the world's breath or hushed and deep in our own conscience are the answers to the great eternal questions of right and wrong.

There is one point that one misses, perhaps, all too often. Memory, indeed, is the basis of life and the impulse for further living, and yet alongside of memory lives will, and it should and can control. For memory to be of use must be determinedly selective. In learning, if it is the part of memory to register the matter covered, it is the part of will to rein her in, to keep what is worth while and discard the dross. An unrestrained memory will catch at words and thoughts rejected by the feeble will and hoard them because of the very revulsion of feeling with which they were met. It is part of the obligation of the will to serve as selector for the memory.

It is amazing how much a mere memory of beautiful words will crowd out of life what is ugly and painful and sordid. "He was born a philistine," said a lady of a certain scholar, "but by dint of giving his life to work on the Greek anthology he has attained a delicacy of feeling and perception that the longest line of ancestors sometimes fails to bestow." It used to be told of RICHARD PORSON that in calling on a friend whom he found reading THUCYDIDES the latter asked him the meaning of a word. PORSON, in giving the meaning, recited by heart the passage in which the word occurred. "But how did you know," asked the astonished friend, "that it was that passage I was reading?" "I remember," replied PORSON, "that that word occurs only twice in THUCYDIDES. Once on the right-hand page in the edition you are using and once on the left. As I saw you looking at the right-hand page, I knew which passage it was."

This anecdote can be equaled by an authentic one of that infant phenomenon WILLIAM JAMES SIDIS. When he was five years old, he went up to a lady who was coming in from the fields with an armful of Joe-Pye and remarked: "That is pretty Jo-e (with an accent on the final e) Pye." "We don't call it that way, William; we call it Jo-Pye." "It is Jo-e-Pye!" shrieked that excitable infant. "See Mrs. DANA'S *Wild Flowers*, page 252." There were the incipient accuracy and the amazing memory of the burgeoning genius in the reply.

There is another use to which a verbal memory can be put. Is it not advised somewhere in the Scriptures that when one wishes to be angry or cruel or foolish one should first "stand still awhile and pray"? For those to whom prayers do not come swiftly or easily a few beautiful words remembered will often work the same miracle. Just as the cloud is about to burst try such words as—

"In la sua voluntade é nostra pace";

or

"Absent thee from felicity awhile";

or

"An instantaneous, penetrating sense,
In spring's birth-hour of other springs gone by."

Such words may have no relation to surrounding life, but there is something in the gentle cadence that holds a sordid passion or mean thought at bay.

But it is not only in learning that memory can be taught to serve. Why should we linger over the records of our own defeats and sadden the present by an erring past? It is not even the part of courage to let our past paralyze us. Down the long perspective of our years we can select our memories and emphasize as we will. If a memory blights or shames, then "plant it in the realm of the nonexistent," as the old Chinese mystic says. Strangle it, throw it down and walk over its body to the things which lead to strength and joy. It is just as well to linger over our victories. There must have been some victories to remember even for the feeblest and the least of us—some few times when, awed by the chaos and devastation about us, we yet set our teeth, tilted our chins high, and walked on uncowed over the waste and tares. Perhaps, too, it is just as well to count among our victories those times when, half weak and half strong, we wailed indeed, but worked on through our hurt; turning out, in despite of pain, our tiny quota of the world's product. Whenever we can remember and lay to heart in our trouble

"That time and the hour run through the roughest day,"

we may set the experience on the victory side of the account.

When all is said and done, no experience remains what it was in the beginning if we have transformed it into a new power or finer purity or wider knowledge. As MAETERLINCK has somewhere said: "What one has done and what one has experienced matter much less than the way one recalls what one has done and what one has experienced."

Correspondence

THE NEWEST CANDIDATE

SEATTLE, WASH., *March 4, 1912.*

To the Editor of Harper's Weekly:

SIR,—Like Mr. J. T. Bond, I enjoy your comments on T. R. and Bryan. Mr. Bond is a Democrat, I a Republican. I am a straight Republican, but in no sense a Roosevelt Republican. I have had my fill of Elbaism resuscitated.

When ninety million people have but one aggregate of brains capable of governing them (if they ever do), then I want either my "ascension robe" or some "boundless contiguity of shade" among the crocodiles (no tears) that missed T. R.'s aim. Yes, siree, Bobby, I am a Republican, but most any old Democrat will get my vote this year if my party prove so emphatically fool composite as to nominate the arch egotist T. R.

Verily you be right when you say, "Roosevelt is making Taft a stronger candidate every day." That goes to the heart of the situation. Many are the Republicans I have heard pronounce anathemas on T. R.'s astounding pretensions. There are many thousands such who would not vote for him for President. My calculus has gone too long from my mind to enable me to count them. Myriad legions do they number.

You may be right in denying that Roosevelt is a ruffian when speaking of physical traits (ability, spirit, or habit), but you are certainly in great error if you deny that he is a demagogue. If you essay to do such, please tell me what make of dictionary you use.

I am, sir,

S. ROSS PARKER.

SOUTH CONWAY, N. H., *March 1, 1912.*

To the Editor of Harper's Weekly:

SIR,—Before the claim is staked and filed that Theodore Roosevelt is a second Andrew Jackson, permit me to point out briefly the likeness and unlikeness of these two men.

Andrew Jackson was true in his friendships; Roosevelt's spear knows no brother.

Andrew Jackson was stubborn in his conceits; Roosevelt is stubbornly conceited.

Andrew Jackson revered our institutions; Roosevelt looks upon the Constitution only as a check to his ambition.

Andrew Jackson loved the common people; Roosevelt loves the power of the people's suffrages.

Andrew Jackson made war for the sake of peace; Roosevelt opposes the peace treaties for the sake of war.

Andrew Jackson beat back the English at New Orleans and saved a nation; Roosevelt charged up San Juan Hill and shot a Spaniard in the back.

Andrew Jackson made presidents to revenge his personal enmities; Roosevelt seeks the third term to show the world that he is a greater man than Grant and Washington combined.

So far our comparisons, except the last, give the prize to Andrew Jackson. Who should be accounted the winner in the last contest I gladly leave to the referendum, that new method of judgment, to decide. Indeed, the career of Andrew Jackson up to and through his Presidency, if we make due allowance for the time and the rancor of party chronicles, was a distinct contribution to the growth of our country and the preservation of our institutions. It was only after his retirement from the White House, and the practical transference of the seat of national government to the Hermitage, that Jackson's conduct and influence are open to criticism. By means of his great popularity, Jackson struck down in both parties every leader who might have guided the nation into a safe harbor. The final result was that issues which should have been decided by statutes in the end had to be settled by bullets.

I am, sir,

THOMAS P. IVY.

CUMBERLAND, MD., *March 5, 1912.*

To the Editor of Harper's Weekly:

SIR,—Yours of the 26th ult. received and I thank you, but do not wish to read your paper often. The magazines and papers are doing much to render it impossible to elect a Republican President. The papers of this country, even those that believe Mr. Taft is a safe and capable man, do not realize that abuse of the ex-President is really aiding him and making it difficult to elect Taft, if he should be nominated, and are paving the way for Roosevelt to sweep the country if he should be nominated.

You know and every other student of political conditions know that Mr. Roosevelt cares nothing for the Presidency, and the lack of diplomacy and tact, on the part of Mr. Taft's administration in matters that were of interest to Mr. Roosevelt, are the only reasons that the ex-President went into the fight.

I am, sir,

T. G. POWNALL.

BERKELEY, CAL., *February 27, 1912.*

To the Editor of Harper's Weekly:

SIR,—Whatever may be our opinion of Roosevelt, we certainly must acknowledge that he is a great teacher of history. On February 26th Mr. Roosevelt is reported to have said:

"It must be clear to any reasonable man that the precedent which forbids the third term has reference only to a third consecutive term. It grew out of the fact that a President of the United States, under the convention system of electing delegates, if he knows how to use the machinery at his disposal, can renominate himself even if the majority of his party is against him."

This was truly instructive to me, for I had long labored under the impression that the anti-third-term precedent had been established by Washington some time in the neighborhood of 1796, and that the convention system of nomination had its origin with the Anti-Masonic Party more than thirty years later.

I am, sir,

A. NOTFORTED.

DENVER, COLO., *February 29, 1912.*

To the Editor of Harper's Weekly:

SIR,—Theodorus Perfectus has declared that he will support the Republican nominee for the Presidency, whoever he may be. Suppose the Chicago convention should select Mr. Taft, who is the Colonel's political antithesis, and should promulgate a platform directly opposed to the Roosevelt creed, could even so versatile and variable a gentleman as he advocate Mr. Taft's election without an open confession of the most flagrant insincerity? Can he with even the slightest semblance of consistency make a pre-convention attack upon the political beliefs of his opponent and yet affirm his willingness and readiness to support him with voice and vote if he should prevail in the high councils of his party?

I am, sir,

JAMES J. BANKS.

KENT'S HILL, ME., *March 4, 1912.*

To the Editor of Harper's Weekly:

SIR,—We were very much amused over your editorial of last week. We can see where the "hate" comes in, but why HARPER'S WEEKLY should hate Roosevelt we cannot understand. Evidently the same mystery troubles us as troubles you in the matter.

I am, sir,

C. J. COLE.

HE CONSENTS

MIDDLETOWN, PA., *February 21, 1912.*

To the Editor of Harper's Weekly:

SIR,—Would you kindly let me know through the columns of HARPER'S whether or not Colonel Roosevelt has declared himself in favor of woman suffrage, and oblige a subscriber?

I am, sir,

JOHN A. KRAMER.

He is not impatient for it, but favors it if a majority of women want it.—EDITOR.

Inopportunities

DEAR MR. KNOX,—In setting forth
Upon your Southern trip,
Be careful when you leave the North
Lest somewhere you shall slip.
If it perchance is in your mind
To spend an afternoon
In old Colombia, you'll find
The time Inopportune.

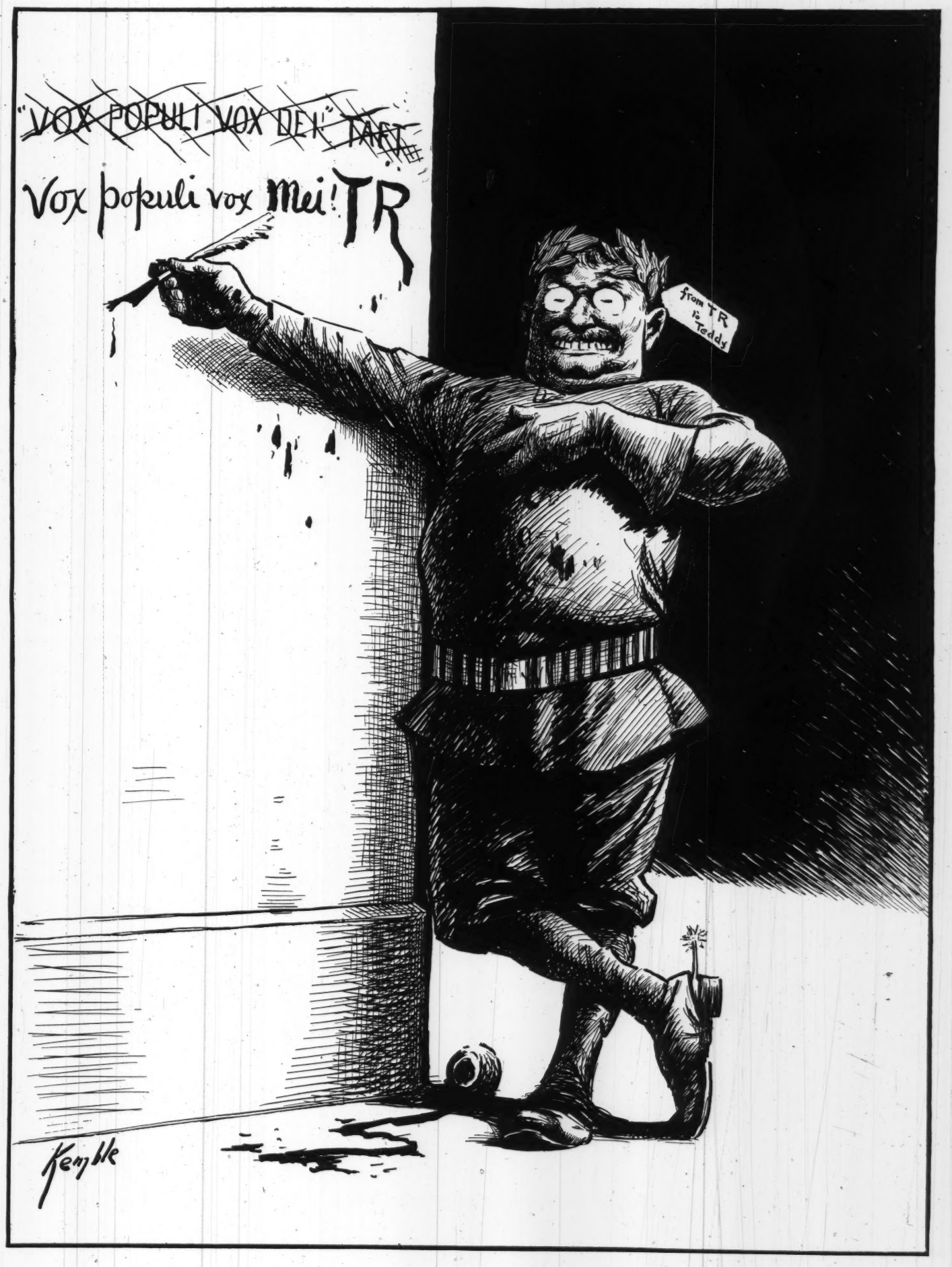
DEAR GIFFORD,—I am told that you,
To all advices deaf,
Are going on a visit to
Your old friend Bob La F.
Pray do not let me interfere
In this, my humble rune,
But I am much afraid, my dear,
That call's Inopportune.

DEAR SENATOR,—I understand
You'd like to pay address
Unto that glad blue-pencil band
Who run the daily press.
If it were "P. P. C." mayhap,
They'd take it as a boon,
But otherwise it might, old chap,
Prove—well, Inopportune!

DEAR MR. TAFT,—I've heard it said
That you are coming here
To pay a call on Colonel Ted,
Your chum of yesteryear.
I'd come of course, but—not to-day.
Make it "not yet, but soon."
A visit now, I grieve to say,
Might prove Inopportune.

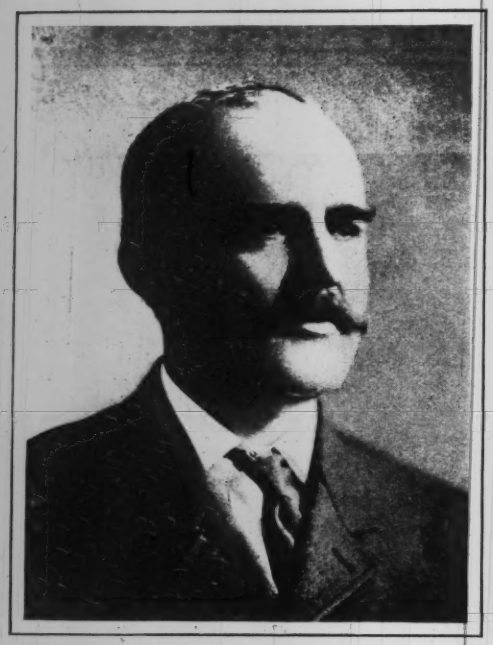
DEAR TED,—I'm told you contemplate
An early White House call,
To choose new tints to decorate
The private office wall.
If I were you I'd wait awhile—
Just put it off till June—
Just now a visit of that style
Might be—Inopportune!

HORACE DODD GASTIT.



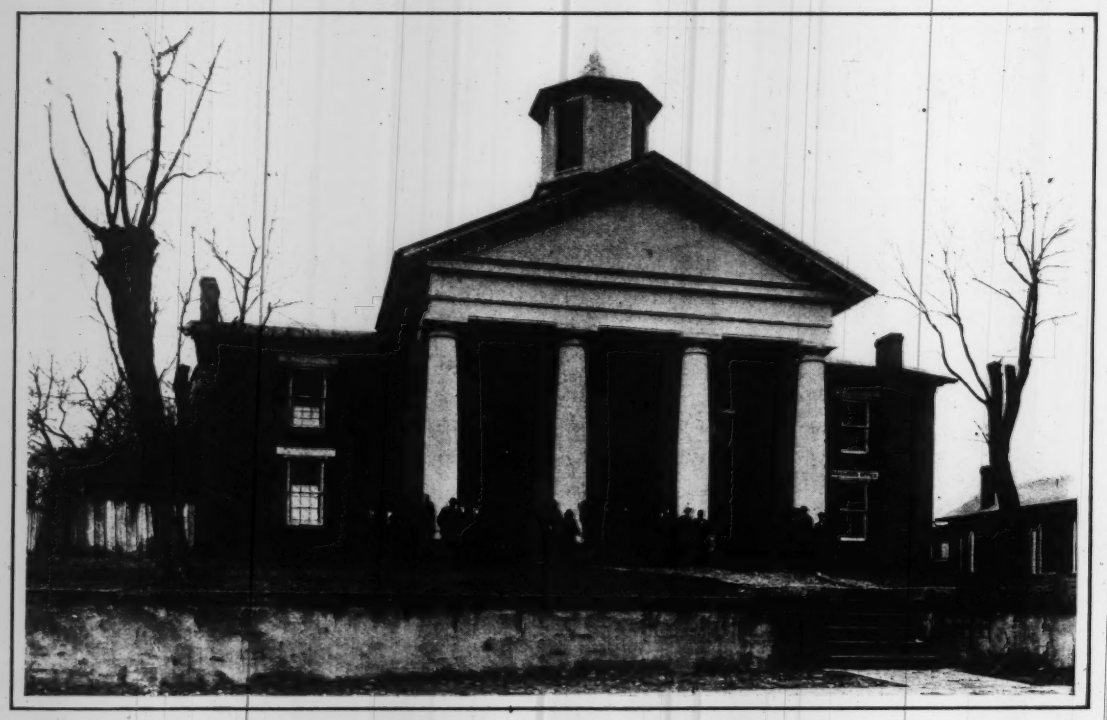
THE ISSUE

DRAWN BY E. W. KEMBLE



Judge Thornton L. Massie, who was murdered in court

Floyd Allen, photographed upon his cot in the jail at Hillsville



The court-house at Hillsville where the murders occurred

The posse prepared to leave the court-house in search of the outlaws

ONE KIND OF RECALL

CIRCUIT JUDGE THORNTON L. MASSIE, ATTORNEY WILLIAM L. FOSTER, AND SHERIFF LEW WEBB WERE SHOT DOWN AND KILLED IN THE COUNTY COURT-HOUSE AT HILLSVILLE, VIRGINIA, ON MARCH 14TH, BY MEMBERS OF THE ALLEN CLAN. FLOYD ALLEN, WHO HAD JUST BEEN SENTENCED TO THREE YEARS' IMPRISONMENT FOR HAVING AIDED A PRISONER TO ESCAPE, PARTICIPATED IN THE MURDER, BUT WAS WOUNDED AND UNABLE TO ESCAPE. A POSSE STARTED IN PURSUIT OF THE OUTLAWS, WHO ARE CONCEALED IN THE MOUNTAINS, AND IT IS STATED AS WE GO TO PRESS THAT TROOPS WILL BE CALLED OUT TO STORM THEIR STRONGHOLD

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Miracles in Iron and Steel

By Thaddeus S. Dayton

THE cities of the modern world are now being rebuilt for the third time within a hundred years. Most of the houses were first constructed of wood; later these began to be replaced, gradually, by brick and stone. To-day steel is the basis of building, as of all the other arts of peace and war. Our sky-scrapers tower nearly a thousand feet in air, gigantic and enduring monuments to the age of steel. The furnaces of the great steel-mills are the caldrons of our modern civilization. Out of them come the sky-scrapers on land and the thousand-foot ships on the sea, railways and locomotives and cars, the tiny needle in the explorer's compass, gigantic bridges, subway tubes, and under-river tunnels.

The first great step forward in the manufacture of steel was taken in the late '50's, when, almost simultaneously, Henry Bessemer of England and William Kelly of Pittsburg discovered that the impurities of iron could be burned out by a blast of air. Since then many improvements have been made in the Bessemer process, as it is now universally known.

In the Bessemer process, about ten tons of melted pig-iron are poured into a hollow, pear-shaped converter lined with silicious material. Through the molten mass is then forced 25,000 cubic feet of cold, dry air per minute. All the moisture is frozen out of the air; dry air burns as readily as dry wood. In about four minutes the silicon and manganese have been oxidized by the oxygen in the air, have combined with it, and have formed a slag. The carbon in the iron then begins to oxidize the carbon monoxid. This boils up through the metal and pours out of the mouth of the converter in a long, brilliant flame that fills the air at night with glittering sparks. After another six minutes the flame shortens or "drops." The operator then knows that the carbon has been eliminated to its lowest practicable limit and the operation is stopped.

It takes a skilled eye to know when this change is complete. So great has been the heat produced by the oxidation of the three impurities that the temperature at the end of the operation is higher than it was at the beginning. The liquid mass is relatively pure metal, white hot. Then, in accordance with the use to which the steel is to be put, so as to produce the desired degree of strength or hardness or both, a carefully calculated amount of carbon is added. So rapidly is the carbon burned out in the Bessemer process that it is impossible to stop the operation at just the precise point when a certain exact percentage of carbon remains. Therefore the only way is to burn it all out and then put back what is required. About 1½ per cent. of manganese and one-fifth per cent. of silicon are also added. The manganese is put in so as to remove from the molten mass the oxygen with which it has become charged during the operation, which would render the steel unfit for use if allowed to remain, and also partially to neutralize the effect of the sulphur. The silicon is added to get rid of the gases and thus to prevent the formation of blow-holes.

When all this has been done a lever is pressed, and the great pot tilts and pours its contents into huge jars or crucibles of clay. These are swung on cars and form a miniature train. As they roll away some of the metal is still sputtering and glowing white hot, and some has turned a brilliant red. The contents of these jars are called ingots. The metal is allowed to solidify, but while hot it is put under the great rolls and pressed out into the size or form desired. The characteristics of the Bessemer process are the great rapidity with which the metal is purified—about ten minutes to the "heat"—that no extraneous fuel is used, and that the metal is not melted in the furnace where its purification takes place.

The basic open-hearth process is carried on in a furnace which is heated by burning within it gas and air, each of which has been heated to a very high temperature before being introduced into the combustion chamber. The metal lies in a shallow pool on a long hearth, composed of silicious material, and is heated by radiation from the intense flame. To the metal is added a sufficient amount of lime to form a very basic slag which will dissolve all the phosphorus that is oxidized. The impurities are oxidized by an excess of oxygen in the furnace gases over that which is necessary to burn the gas. This oxidizes the slag, and the slag oxidizes the impurities. To hasten this action, iron ore is added to the slag and the carbon is diluted by adding varying amounts of cold steel scrap instead of all pig-iron. It takes from six to ten hours to purify a charge, after which the metal is recarburized and cast into ingots. Large charges can be treated in a single furnace, however—one hundred tons or more at a time.

The first Bessemer product appeared in 1864. Up to that time steel had cost six or seven cents a pound for ordinary grades. The industrial development of the country was being retarded. Since then steel has sold for less than a cent a pound. Steel billets by the hundreds of thousands of tons have sold at the historic rate of three pounds of steel for two cents.

The first wrought iron "I" beam was rolled in 1855. No one realized it then, but this was the preliminary step toward cheaper fireproof construction. There were no high buildings in those days, for the simple reason that the higher the walls were carried the thicker they had to be made at their base. A structure ten stories high required foundation walls of such immense thickness to hold up the weight that there was little space left on the ground floors. In the early '80's iron and steel began to be used as a substitute for wood in the framework of buildings.

Then came the great discovery that inaugurated the era of sky-scrapers. It was found that the framework of a building could be made like a huge steel cage; that it could be so connected together that the framework would carry and distribute the weight of the walls and of the whole structure evenly over the whole of the ground area, instead of letting the walls alone carry it. Timidly at first, buildings began to grow higher and higher. Steel of greater and greater tensile strength began to be called for, and the art of bracing the tall structures to withstand a seventy-five-mile-an-hour gale became an exact science.

To-day New York City consumes more than forty per cent. of all the structural steel that is manufactured in the United States. The value of its new structures in which steel plays an important part is more than $250,000,000 a year. The total value of the products of the steel-works and rolling-mills of the United States is more than a billion dollars annually. It has increased nearly fifty per cent. in the last five years.

The ultimate maximum height of the sky-scrapers is as much a matter of conjecture as how long they will last. Scientists say that steel will last forever if protected from air and from electricity. Constant painting will keep out the air and preserve the steel. More and more attention is being paid to insulating steel against the devouring action of wandering electrical currents that disintegrate steel and even stone with rapidity. Therefore the most sanguine among the architectural and mechanical experts are of the opinion that New York, the city of steel that it is to-day, will endure for at least a thousand years; that it will stand the ravages of time better than the massive stone temples of the past.

Another thing that has caused more or less uneasiness is the possibility of the supply of iron giving out. Three eminent experts recently announced their opinions. One placed the end of our supply of iron ore at 1940; another ten years later, and the third before the end of the present century.

The stupendous increase in the use of iron and steel shows that there is some ground for worry. The present annual production of iron ore is about 1,200 pounds for every man, woman, and child of our population, and it is increasing steadily. To move 1,000 tons of heavy freight by rail requires an 80-ton locomotive and twenty-five 20-ton steel cars (each of 40 tons' capacity), or 580 tons of iron and steel, with an average of ten miles of double track (with 90-pound rails), or 317 tons additional; so that, including switches, frogs, fishplates, spikes, and other incidentals, the carrier requires the use of an equal weight of metal. That means that for every ton of freight carried by rail a ton of steel is required to transport it.

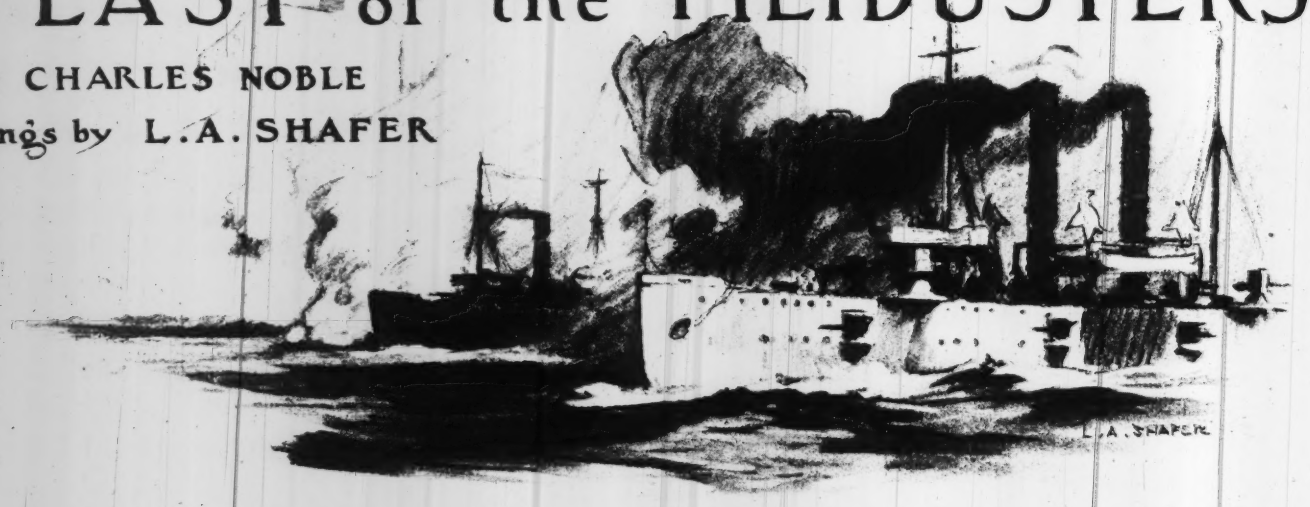
On the other hand, the depletion of the world's supply of iron ore received very careful consideration at the International Geological Congress at Stockholm, in August, 1910. Scientists from all over the world were present. It was their opinion that as fast as the present fields of iron ore were worked out new ones would be found; that the earth's riches in iron were practically unexplored as yet; and that even the present mines would not be exhausted for many generations to come.

The ultimate maximum height of sky-scrapers is as much a matter of conjecture as how long they will last

The LAST of the FILIBUSTERS

By CHARLES NOBLE

Drawings by L. A. SHAFER



NOT so very many years ago a certain ancient white fruit-steamer—let us call her the *Psyche*—was quite a familiar figure in the little banana ports up and down the Mosquito coast. She had been in the New Orleans carrying trade since time unknown, and she looked for nothing better than to end her days in that humble but useful and entirely respectable occupation. But whether the ears of the powers above caught her prayer for a spice of adventure in her old age, or whether they merely acted on their own initiative and without any regard for her feelings, the results were sufficiently disturbing.

One quiet afternoon there turned up in the offices of her owners, down near the levee in New Orleans, a very small, very dapper, excessively polite, and on the whole quite imposing swarthy gentleman. He was, he explained on introducing himself, an accredited agent of the (then) Quitarian government. Herewith he produced a large and very beautifully decorated commission. When the canny Norse ship-owners had given vent to the appropriate sentiments of deep appreciation of the honor that had been done them, and profound respect for their distinguished visitor, the distinguished visitor got down to business with gratifying promptitude, and unfolded a tale of woe. No wonder, the listener must think, his patriotic heart was wrung. The cruel revolution that had been desolating his unhappy country had been making frightful progress of late toward the capital, and if something was not soon done to stay it, all true patriots might find exile the prudent course, or at least preferable to facing the firing squad with their backs to the nearest brick wall.

The illustrious President Santos, Defender of Liberty, had been taken already with a severe nervous complaint and had sought change of scene and climate, taking with him, it was hinted, no small portion of the sinews of war from the treasury as reward of long service. His successor, the valiant and accomplished Dr. Cadres, was but feebly upholding the banner of law and order against the pertinacious insurgents. Fortunately, among the ranks of the administration's defenders was a strategist—the present unworthy ambassador. He had ventured to point out that the strength of the insurrection lay along the sea-coast—the insurgent capital, in fact, the town of Blacklands, being their only means of communication with the outside world and the source of all their strength. Could the government only take Blacklands in the rear, blockade it, bombard it perhaps, if not capture it, the insurrection would perforce collapse, and righteousness and the government would triumph. Hence (with great dramatic effect) the present mission. A further inroad had been reluctantly made in the already depleted treasury funds, and therewith a gunboat was to be purchased, armed, and equipped. Could the so kind ship-owners, being of course well acquainted with the state of affairs, and equally, of course, the friends of law and order, be so gracious as to inform as to where a suitable steamer was to be found?

The canny Norse friends of law and order considered. Having been long engaged in the Central-American trade, they were perfectly well acquainted already with the state of affairs in Quitaria. It was probably more to their interest to have the revolution suppressed and power in friendly hands, but if the revolutionists were really getting the upper hand a quick settlement and resumption of moderately peaceable conditions was desirable. For while the revolution was in full swing it was hopeless to expect anyone to pause in the midst of the excitement long enough to pick bananas, or engage in any other occupation that offered only an honest living. Still, as in any case things would be unsettled and the banana market poor for a long time to come, why should not a wise man secure what consolation he could from the situation? Here was the poor old *Psyche*. She had been laid up in idleness ever since the revolution started, and at best there could not be many more years' service in her. If this pompous little envoy was so innocent of ship-knowledge as to be willing to pay a top-heavy price for her, *caveat emptor*. Who was under obligation to enlighten him? Surely not her owners.

So they gladdened the little envoy's heart by selling him the *Psyche* for $80,000 in good American gold, $20,000 down and the balance after delivery. Then a quiet, square-built little man with a massive mustache and cool, rather sleepy blue eyes, who said he was Captain Kohlmann of the Quitarian Navy, came on board the *Psyche* with a motley gang—complexions mostly rather dark—which he said was his crew. He took possession of the ship without any unnecessary fuss or display, and lost no time in slipping unobtrusively down the river and out to sea. No matter how laudable the transaction might have been, there was a most commendable modesty about the manner in which it was carried out. Whether Uncle Sam could have found grounds for interfering, I don't know. There is no harm in saying now that most people along the Mosquito coast believe he, or at least his State Department, was covertly in favor of the revolution. Had the *Psyche* and Captain Kohlmann not left the Mississippi River, however, certain hard-working officers of your Uncle's navy would have been saved a great deal of worry. But worry is a naval officer's business.

There may be less sympathy with the second disastrous and untoward result of the *Psyche's* hasty departure. This fell upon the shoulders of the canny but too trusting Norse ship-owners. They learned too late that a Central-American envoy might make up for ignorance of shipping by an equal ignorance of the hampering principles of common honesty. For from that day when the *Psyche* steamed downstream, never to return, dates the final disappearance of the purchasing agent—and with him went the $60,000 balance of the purchase price. Surely this was an auspicious beginning for the new career of the ex-fruit-carrier.

From that day to this the *Psyche* has never been seen; but the Quitarian cruiser *José Santos* appeared off the port of Blacklands some two weeks later, and some say there was a striking resemblance between the two. What likeness there was, was only beneath the surface. Instead of the sleek white sides of the fruit-steamer, this ship was painted a rusty black, and on poop and forecastle, and in what in the *Psyche* would have been called cargo-ports, appeared lean, black Krupp muzzles. Beyond question this was a man-of-war, and 'twere a parlous insult to mention bananas in her presence.

Nor ever did banana-boat bear on her bridge the like of Captain Kohlmann. To me at least the figure of the

There were spectacular bombardments of the seaward side of the town

worthy captain is even more full of interest than his command. Perhaps the reason is that he is even more wrapped in mystery. Rife as was the speculation and many as are the tales of him along the Mosquito coast, there is never a man to be found willing to say with authority concerning him that such was his true name and thus and so his previous history. For the captain himself never told. Some say that he came from Schleswig-Holstein—and they hint at a highly romantic tale of his separation from the Imperial German Navy—but who knows? Silent, imperturbable, efficient, whatever he may have thought in the depths of him concerning his strange command or his still more amazing crew, no one has ever questioned his ability to handle both. His present employers were surely in no position to demand more of him. Whatever he may have been, he belonged to a very old school indeed, to the school of lawlessness that has flourished in the treacherous, turbulent Caribbean since the brave days of old Sir Henry Morgan and Francis Drake. Nevertheless, as Captain Kohlmann found, the day of that school has passed.

For a time the blockade of Blacklands went on swimmingly. The moral effect alone of the *Psyche's* presence turned the scale for a time toward the government. There were spectacular bombardments of the bluffs on the seaward side of the town, and the crew of the gunboat took huge delight in holding up and terrifying the occasional Jamaican fishing-smack. But news travels fast nowadays, and before long there drifted down over the horizon first one, then another trim white gunboat, as spotless and trim as the poor old *Psyche* was now dirty and disreputable. At the gaff of each of the new-comers flew the same beautiful old flag—red and white stripes, with white stars in a blue field in the upper corner. That flag is well known all along the Central American coast—well known and unpopular. The ships that carry it have worked hard to earn its unpopularity by their continual and unmannerly habit of turning up in the midst of every promising revolution, just when the coast looked clear for a little quiet looting. They have even been known to insist on fire-eating patriots paying their debts just like the common herd.

Unpopular or not, the flag turns up just as persistently as ever, and Captain Kohlmann and his gallant crew knew what it meant as well as anybody. All the fun and excitement went out of blockading, and it became hopelessly slow work. From the day of the arrival of Uncle Sam, the revolution took its final turn to success.

Patriotism on board the *Psyche* had much to contend with. Not a man on board had yet received one cent of recompense from the agent who had enlisted him, nor from any one else. Time dragged on, the insurgent forces closed tighter and tighter around the capital, and simultaneously the hope of a pay-day grew fainter and fainter. Nor did the emissaries of Uncle Sam show any signs of abating their watch. It must have been a very disconsolate crew of patriots who manned the cruiser *Psyche*.

Finally the last flicker of hope was ruthlessly extinguished. Dr. Cadres and his fellow-upholders of law and order followed their late president's example into exile, though hardly, I fear me, with equal success financially. The *Psyche* was left alone on a hostile coast, with never a shadow of authority or a friend to uphold her, and never an eye upon her but was suspicious and unfriendly, if nothing worse. The profession of war-ship may be more exciting than the business of banana-carrying, but it has its ups and downs.

Captain Kohlmann, however, was a man of enterprise and resource. Needs must be in his chosen profession. In the present emergency he bethought him that up the coast, in the sister republic of Cordenas, there was also a revolutionary conflict in full flower. Why should there not be found in Cordenas a market for patriotic zeal?

Unfortunately times have changed sadly since the brave old days when a captain of free companions was accustomed to ride forth as free as air, to sell his sword-hands to the highest bidder, and none to question or say him nay. The *Psyche* and her captain, indeed, encountered no opposition in leaving the inhospitable waters off Blacklands, but when they appeared off the land of promise, the first thing both set eyes on was one of the identical gun-boats that had been so unpleasantly in evidence at the former place—and no one knew better than Captain Kohlmann that the game was up.

Perhaps a desire to take the bull by the horns was the cause of the captain's next move. It was at least a surprising one. The foxy Kohlmann lost no time in having a boat lowered, pulled over to the Yankee man-of-war, and made a formal surrender of himself and his ship. Whatever the motive behind this performance, it completely dumfounded Captain John Clemens, United States Navy, for whose benefit it was given. That excellent captain had already had quite enough of the *Psyche* and all her works, and all the answer Captain Kohlmann reaped was a peremptory order to return to his ship and leave Cordenian waters instantly.

As the *Psyche* steamed out to sea again, there was no doubt in any mind—least of all in Captain Kohlmann's—that she was in desperate straits. She was short of coal and provisions, and possessed neither money nor credit with which to procure either. But if she had had both, wherein would she have been better off? As she was, she had no more legal right to the high seas than a plain pirate. Uncle Sam refused to protect her—nay, more, if her former owners were able to advance any proof of their claims they might bring suit in the courts of admiralty, and cruisers would be scouring the seas in search of her. If they took her back to Blacklands and surrendered to the new Quitarian government the *Psyche* might regain a certain legal status, but her present captain and crew might be sure of prison, if they escaped a firing squad and a dead wall.

A less capable mind than that of the little captain of the *Psyche* might have turned to piracy in sheer desperation, and then would have followed a speedy and unromantic finish, in which not one of the leading ex-patriots would have had a foot left on the ground. But it is only at the most perilous pass that the true greatness of such as Captain Kohlmann is made evident. With wonderful clarity of vision he seized upon his sole remaining asset, and made the most of it. Holding a commission from a government that had no existence, lacking almost everything that is the breath of life to the captain accustomed to the safeguards and restraints of the law, he still had two things, undisturbed possession of a ship, and a crew who acknowledged his authority. He proceeded to make use of them.

Some days after her departure from Cordenas the *Psyche*, considerably the worse for wear, appeared in the harbor of Puerto Boca, in the quiet little republic of Casa Grande. Captain Kohlmann went ashore. What persuasion he used on the local port authorities, nobody knows. The subject is not at present a popular one in Puerto Boca. But everybody does know that there was a formal surrender of the *Psyche* to the government of Casa Grande, with enough pomp and circumstance to satisfy the most exacting Latin-American. Captain Kohlmann and his crew were paid in full by the same government, their entire claim for back pay amounting, it is said, to some $15,000. And with this reward for faithful service they pass, one and all from the stage. I confess to a hungry curiosity to know the further adventures of Captain Kohlmann. But that curiosity seems destined to remain unsatisfied—unless he should happen to read this and win my gratitude by enlightening me. Whether he went back to Schleswig-Holstein—if indeed he came from there—and settled down, I don't profess to know. But I hardly think it likely. Wherever he is, he has my good wishes and also my sincere admiration. But the Mosquito coast has seen him no more.

The *Psyche* is still lying in Puerto Boca. Stripped of her guns, covered with rust and barnacles, a more unkempt, dirty, and forlorn-looking craft never floated. She represents the security of the Casa Grande government for that lost $15,000, but the present Quitarian government have no such sum to spare, do not acknowledge the claim, and most emphatically do not want the poor old ship at any price. Consequently it may well be that she has found her last port. No flag now flies above her, perhaps none will ever fly again. Such is the sad ending to the story of the one-time honest old fruiter, chosen by Fate for the melancholy part of the last of the filibusters.

The City of Titans

SOME OF THE ENGINEERING MARVELS WHICH NEW YORK HAS ACHIEVED AND IS ACCOMPLISHING

By Steven D. Thatton

A FAMOUS mechanical engineer of New York City was once asked if he would take the contract of mounting the Brooklyn Bridge on wheels and dragging it across the bed of the Atlantic Ocean to Europe. He replied that he would, if enough money were provided; that the project was perfectly feasible. He then sketched out how it could be done, and added that, if he were paid for doing so, he could bring the rock of Gibraltar back with him on pontoons and set it up in Central Park.

To-day engineering feats differ only in magnitude. In some, of course, knotty problems are encountered, but they are always solved. There are certain proven mechanical principles that are the basis of all engineering work to-day. To meet the size of the task they have to be magnified, in their application, a thousand times or a million times. If a stream of water an inch square, for instance, at a pressure of ten pounds to the square inch, be pumped against a piston head containing ten square inches, the pressure on the piston is ten pounds for each inch, or one hundred pounds. This law exists, no matter how small the stream or how large the piston.

Put a stream of water an inch square and under two hundred pounds pressure against a piston head ten feet square, and the power will equal the weight of 34,560,000 pounds. Enough hydraulic devices of this sort, working simultaneously, would drag Gibraltar from its base.

New York City is the greatest center in the world for engineering achievements. Manhattan Island, long and narrow and surrounded by swift-flowing tidal waters, the Brooklyn shore, Staten Island, the Narrows, and the Upper and Lower Bays, have afforded an unparalleled opportunity for engineering genius to meet the needs of the tremendous increases in population.

One of New York's mightiest engineering undertakings is the colossal Catskill water-supply system that will be finished about two years from now. People from every part of the world have crossed the ocean and have traveled thousands of miles to look on the Panama Canal, but this giant system of aqueducts and under-city tunnels is almost as great and fully as marvelous. This work that is being done by the municipality will cost about $162,000,000—nearly half as much as the Federal government is expending at Panama—so that New York's cup shall brim with clear water from year's end to year's end until the city's population is double what it is now. It is like pouring a river into the city.

This great aqueduct is 128 miles long. Its sources are in the Catskill Mountains. One feature of it, the Ashokan reservoir, will hold enough water to cover Manhattan Island to a depth of 28 feet. This great lake is held back by a gigantic dam of masonry almost as large as that at Gatun, in Panama. The Olive Bridge Dam is 610 feet high, but two feet lower than the Singer Building. If it were placed across Manhattan Island at Liberty Street it would extend to Jersey City on the west and Brooklyn on the east. Under deep valleys, through great mountains, the course of the aqueduct runs. It plunges under the Hudson River at Storm King in a giant siphon tunneled through the living rock more than a thousand feet beneath the river bed. When it reaches the city's northern boundary it dives underground again. This tunnel, which is now being constructed, will be 17 miles long, and will be driven through the solid rock from 200 to 700 feet below the surface of the streets. It will be 15 feet in diameter, and will traverse Manhattan Island almost to its southern extremity. Near the Manhattan Bridge it will swing eastward and pass under the East River, more than 700 feet below the level of tidewater. Thence it will run through Brooklyn and cross beneath the Narrows to Staten Island. Not only is this aqueduct system the greatest in the world, but the tunnel under New York is the longest ever built. Yet the engineers in charge of this colossal work say that there is nothing unusual about it except its size.

Within the last few years Manhattan Island has become a body of land surrounded by tunnels. There are fourteen of these giant tubes in all. From the Battery to Brooklyn run the two connecting with the Interborough subway lines. These are 15½ feet inside diameter. There are four Pennsylvania Railroad tubes, each with a finished inside diameter of 19 feet, running from the Pennsylvania station at Thirty-third Street eastward to Long Island City. The two "Belmont tunnels" under the East River at Forty-second Street are completed, but not yet in use. Under the North River two Pennsylvania tubes extend from the Thirty-third Street station to Weehawken. About two miles farther south the twin McAdoo tubes, 15¼ feet inside diameter, run over to the railroad terminals in Hoboken, and at Cortlandt Street there are two more that connect lower Manhattan with Jersey City. The total length of these subaqueous tunnels is more than twelve miles. Their connections under the city and on the opposite shores bring their aggregate length up to nearly double that distance.

These tunnels form an engineering feat that is imperial in its conception and execution. They have indefinitely enlarged the residential area of New York City, and at the same time have linked it with the mainland to the west and to Long Island on the east. There are also more than twenty-six miles of subways in operation.

The most incomprehensible thing to the layman is how a tunnel can be driven from each end—say from both shores of a broad river simultaneously—and yet have both ends meet in the middle with only a fraction of an inch error. An eighth of an inch out of the way on alignment and a quarter of an inch on the grade are now considered large, although not serious deviations. When the first tunnels were driven through the Alps, years ago, it was no uncommon thing for the two ends to miss each other by many feet. Making them meet exactly is one of the triumphs of modern engineering. The experts say that it is a simple problem in trigonometry that any bright young man can work out. Every time a few feet of progress has been made the whole tunnel is resurveyed and the results in the two approaching headings are compared. If the comparison shows the slightest error the tunnel is steered to right or left or up or down as required to correct it. This absolute exactitude is made possible owing to the use of cutting shields in the driving of tunnels and of great rings of steel—segments that can be curved to just the necessary degree—for the formation of the walls. When the tunnel ends approach within a few feet of each other, a pipe is sometimes driven through the rock. In this way it is possible to sight and thus check the surveys by actual observation. If any error has been made it can be corrected to a thousandth of an inch.

Four great bridges span the waters of the East River, and a fifth, the mightiest one of all, is being built. Each of these is an engineering marvel and shows the art of bridge-building in its highest modern development. The three suspension bridges have some of the longest single spans in the world—nearly 1,600 feet each—and the huge Queensboro cantilever bridge is even more remarkable with a single span of nearly 1,200 feet.

To enumerate and briefly describe all the engineering marvels of New York would fill a big book. But, wonderful as they are, even more daring projects are conceived and are likely to be executed within the next quarter of a century. It is estimated that by 1940 the city will have a permanent population of more than 15,000,000 dwelling within its 327 square miles. Steam locomotives, the elevated-railroad structure, and even the street-surface railways, the engineers say, will be gone and forgotten. There will be subways under all the important thoroughfares. Hundreds of tunnels will connect Manhattan with New Jersey and Long Island.

MAJOR

A RECORD OF FRIENDSHIP

BY JOHN A. WYETH, M. D.

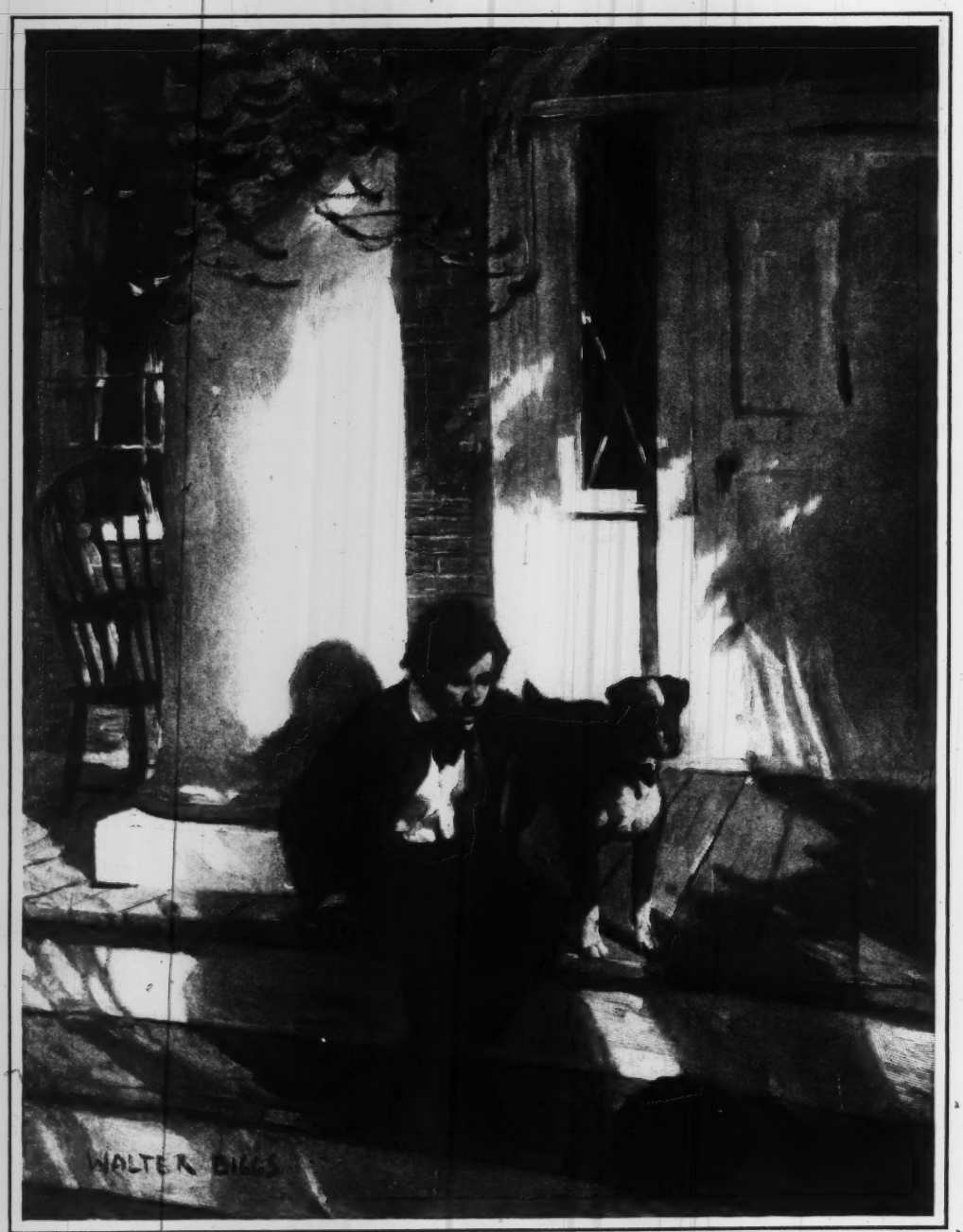
DRAWINGS BY WALTER BIGGS

POETS are born, not made. So are real dogs; and Major was one of these. Not that he had a proud pedigree. Neither have poets, as a rule. Shakespeare's father was a glovemaker, Milton's a scrivener; Spenser was a tailor's son; Keats's paternal ancestor was a hostler, and Bobby Burns's a gardener, and so on *ad infinitum*, always excepting Byron. The English say Byron doesn't count, albeit the rest of the world thinks he made a great score—all of which is a matter of no moment to this nation of lonesome thinkers.

However, the average poet knew who was his father, and here the comparison is odious to Major. Genealogically he was classified as a mongrel or cur; but genealogy, like the thermometer, does not always register accurately. The laws of heredity, like the laws of the universe, are as inexorable as they are wonderful and difficult of comprehension. Major was an illustration. Even as the planets of our system, after eons of divergence in space, come again in conjunction, so in this loved and faithful companion of my boyhood, born to be king of his kind in our village, there were united, by some mysterious alchemy, certain ancestral strains, certain inherited qualities, which made him worthy of founding a dynasty.

Cast in human form he would have been another Forrest, a natural-born soldier. Courage and strategy and tactics were of his mental make-up, and behind these qualities there was a magnificent endowment of muscle and bone which made them savagely effective. Like the "Wizard of the Saddle" who said he "wouldn't give five minutes of 'bulge' for a week of tactics," Major believed in "bulge." He never waited to be attacked. Forrest's one General Order was: "Whenever you see a Yankee, show fight. If there ain't but one of you and a hundred of them, show fight. They'll think a heap more of you for it."

Now, Major was not particular about what the other village dogs thought of him, but he did enjoy a quiet stroll along a dogless highway. Even Cowper in his "Morning Walk" was not more fond of solitude, and as my fighter's reputation spread his meditations were rarely disturbed. At the zenith of his reign, if there was a canine in all the region round about his Judea upon whose skin he had not left the indelible register of his prowess, it was only because the other dog elected to keep between his hide and Major that distance which lent enchantment to the view. When after one of these joy-chases in the wake of a fleet-footed vagrant, he would return panting, with his dripping tongue hanging out of one side of his mouth and come up to me to get the usual pat of commendation on his back, he would sit down on his haunches and in very human fashion laugh at the comical figure the scared fugitive had cut. And it was funny enough to make even a dog laugh; for few things are more ludicrous than precipitate flight whether there be two or four legs in action. In my soldier days I took an active part in more than one cavalry stampede, in which for the time being my comrades and I parted company with our family pride, which is another name for courage. On these occasions, if on no other, I was inspired with the idea of leadership, and if the inspiration was of brief duration it was only because the horse I rode was not equal to the occasion. As one after another the rattled troopers passed me in the wild scramble toward safety, I had ample opportunity to observe the earnestness which characterized each individual's effort to annihilate distance. Notwithstanding the increasing proximity of the pursuers, I registered the ludicrous features of these exciting experiences, and many a time since then—with bullets and sabers eliminated — I have laughed over them.



It came into my mind that I must keep stride with my victorious dog

Somebody has said, or is said to have said: "All the world loves a lover," which is generally accepted as true. There is another saying that "Everybody sympathizes with the under-dog." Elsewhere and in the abstract this may have been—or may be—true, but in our village it did not go. When the under-dog got on his feet, saw his chance, tucked his tail between his legs, and ran, every boy and man whose Christian mother or wife was not in hearing distance yelled at him in terms not found in the Westminster Confession, and added to the enthusiasm of the fugitive the quickening impulse of a stone or a brick-bat.

Naturally Major became the pride of the village, his prowess the talk of the neighborhood, and I, his master, shone, albeit with reflected glory. We are all more or less influenced by environment and association, and little wonder it soon came into my mind that I among my kind must keep stride with my victorious dog. He expected it of me, and when one memorable day I licked the bully of the playground, Major jumped all over me for joy. He ended this demonstra-

tion of approval by holding out his right paw, and when we shook hands he looked and barked a loud and heartfelt "Bully for us!" Not in so many words, for there was no Island of Reil, no "speech-center" in the brain of this noble animal—not even for dog-Latin—but I read it in the proud and joyous expression of his eyes. Candor compels me to include as part of this history that for a week after the encounter the power of reciprocal expression on my part was limited to a single optic.

Victors on every field, Major and his master, like two Alexanders, sighed for more worlds to conquer. In a nearby settlement there was another fighting dog of local repute, and one summer's day when the circus came to town, the boys who owned him and their crowd walked in to see the sights, bringing with them their redoubtable pup. My chum and I were engaged in watching the busy showmen put up the big tent, when the other boys and their champion came on the scene. He was a magnificent specimen of his kind, brindle in color, well muscled, noticeably longer in body and neck and some two inches taller than Major. He was evidently game to the core, for he no sooner saw my pet than he bristled up, fixed his eyes intently upon him, and assumed that muscular tension peculiar to the wolf and cat tribes when about to spring. As he and the boys approached, the circus men, seeing that something exciting was in the air, quit work and with the crowd of loiterers attracted by the "greatest show on earth" turned their attention to the battle-scene.

I recall distinctly that sinking feeling which often comes over one in the first few moments of an impending crisis, the issue of which is doubtful. I put my hand encouragingly on my companion's neck, pulled his head against my leg, and said in a low tone, "Steady, Major!" There must have been some quiver of the arm or tremor in the voice which betrayed my apprehension, for while the other valiant knight was yet some thirty yards away, my champion turned his eyes reproachfully on mine with a look which said, "Watch me." I did watch him, and to my surprise, and for the first time in his life, Major did not advance to meet the enemy.

I knew later that his keen intelligence had cautioned him that this was the heaviest contract he had ever undertaken, and that strategy and tactics as well as courage and strength would be needed to win. I did not know it then, and as the enemy boldly and deliberately advanced, snarling, I almost sank to the earth with shame and mortification as Major not only failed to meet him half-way, but stood there stock-still, seemingly not wanting to fight and wagging a propitiatory tail in friendly fashion, as if he were about to greet a long-lost brother. So deceptive was this assumption of friendliness or timidity or cowardice, that the other crowd of boys began to jeer and yell out at the top of their lungs "School-butter!" and "Chicken-liver!" and a lot of other objectionable constructions of nouns, verbs, and adjectives, of origin as unknown as they were insulting.

It was just as this yell of exultation in anticipation of our discomfiture rose that the strategy of the master mind was disclosed. Unused to such a crowd and to such an unearthly noise, the enemy turned his head for a moment toward his mob of backers. This error sealed his doom, for in that instant, like a stone from a catapult, with lightning-like swiftness and with irresistible force, Major bounded forward, striking full-breasted against the side of the neck and shoulder of the bigger dog, bowling him over on his back. The foe did not hit the ground before his cunning and savage foe had his throat and windpipe in the grip of a pair of jaws that never relaxed their hold until the under-dog was half dead and hopelessly beaten, when we dragged the victor off. As Major shook himself and stood over his fallen foe in triumphant pose, ready to renew the attack, the crowd yelled and hurrahed again and again for him and me. Then we town boys laughed best, because we laughed last.

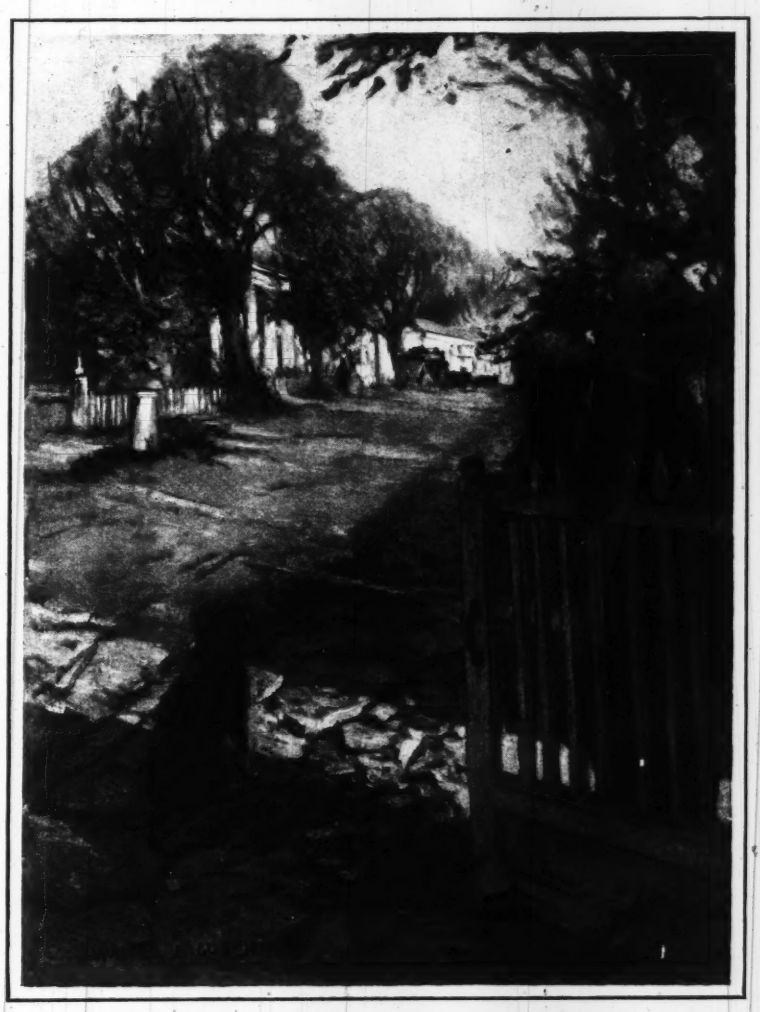
Major's star, ascendant from the day he entered the arena, reached its zenith in this month, when he was four years old and when Sirius was in its glory. From this on, his story is briefly told, and I venture to apply to my faithful friend, tried and not found wanting, a quotation in Froude's *Sketch of Cæsar*: "Everything which grows holds in perfection but a single moment."

When the days of the sere and yellow leaf came on for this my Cæsar, the college days had come on for me, and, although I did not suspect it then, I bade a long and last good-by to the home of a happy boyhood and to my loved and faithful dog. From college I went into the Southern army, there to serve to the end of the Civil War, and when peace came there was no home, and Major had long since gone to the undiscovered country.

After I had left, one of the slaves, ambitious to maintain the prestige of the absent member of the family, brought into the fold a puppy scion of my village king, who schooled him as a lighter—alas, to his own undoing!

As in the course of nature Major's muscles withered and his jaws became toothless, his powerful and plucky son grew more and more resentful of the painful reprimands inflicted by his hectoring sire, and at last turned on him in mortal combat. I was told that when the servants pulled them apart, the beaten but unconquered old warrior, staggering to his feet, tried in vain to renew the hopeless combat. He dragged himself away. A week later they found him dead in the edge of the forest near the town.

Victory or death was the lesson that came with the spirit of this dumb creature. The savagery which he exhibited was his by nature, uncurbed and unchanged by any possibility of a higher intelligence. That of his master, whose heart is now in ripe old age, had less in extenuation. Long before he had reached the years of maturity he was filled with regret that even in the wild life of the frontier and in the riot of restless boyhood he could delight in these tests of animal courage and skill and strength. With all of this, the moral of the lesson was not lost: for Major had taught him that he who fights the battle of life to *win* or *die*, wins.



A long and last good-by to the home of a happy boyhood

The Milk Pitcher of Six Millions

By Charles White

TO fill the milk-pitcher and the cream-jug every day for a world capital like New York is a task so prodigious that at first glance it seems impossible to keep up the supply with regularity. To do the work regularly and keep the supply up to the very highest standard of purity and excellence is a test of genius—especially that genius which consists in an infinite capacity for taking pains. It is the work of an army—not of an army with banners, but an army of dairy experts with the cleanest stables, the best feeding, the finest cows amid the most hygienic surroundings, the most wonderful scouring appliances and dust eliminators, remarkable machinery for cooling and preserving the purity of milk and for carrying it swiftly for hundreds of miles so as to distribute it with promptness among six millions of thirsty and hungry mouths.

The era of

"Where are you going, my pretty maid?"
"I'm going a-milking, sir," she said—

is as extinct as the dodo or the great auk. Milking nowadays is done by a husky man instead of a pretty maid, unless, indeed, it is performed by ingenious machines very well contrived for the purpose. Instead of standing under a shady tree down the lane and answering to the name of bossy, the modern cow has a number and a pedigree as well certified as that of royalty. She has a record kept with scrupulous accuracy—so many quarts of milk, so many pounds of butter per day, per week, month, year—during her whole lifetime, as well as the record of just what she has eaten in that time. So the modern dairyman can tell you, almost at a glance, just what such a cow has cost and what she has produced, prove to a penny just what she has added to the wealth of the world during her humble but exceedingly active career.

The sight of one of his good cows standing under a tree down the lane at milking-time would throw the modern dairyman into a fever. Dead leaves, chips, twigs, insects, etc., fall from trees and corrupt milk. The "harmless, necessary cow" of these enlightened times stands in her highly hygienic stall, which is floored with concrete and frequently scrubbed. The cow herself is curried and brushed every day. Her stall is in a cheerful, well lighted, and freely ventilated barn. Where is the haymow? Gone; gone with the milk-maid, the dodo, and the auk into the obsolete past. Haymows are not hygienic; dust, weeds, clover-seeds, etc., used to fall from them into the milk-pail. So the dairyman has a tight, solid, impervious floor in his loft. Nothing can sift through it. The men who feed and clean and milk the cows are clean-shaven, well-kept, enthusiastic and frequent bathers, who go to their task newly manicured and wearing quite aseptic costumes white as snow.

One listens in vain around the barn for the old slogan "Git over, thar, gol ding ye!" with the accompanying bump of the knee against old bossy's ribs. All that has gone out, too. Cruelty is costly. Kindness pays. Cows kindly entreated as well as hygienically kept and fed yield the most and the best milk. In these days of conservation the man who mistreats animals is picking his boss's pocket. Out he must go.

Do these facts seem strange? They certainly do to this writer, who had the good fortune to grow up in the country long ago. Old-time residents of big cities write letters to editors admiring or complaining about the changes time has wrought since they were boys. They ought to see the changes time has wrought on the farm, especially on a dairy farm. Experts agree that New York City receives the best, purest, and richest milk and cream supply in the world. The reason back of it is—perhaps enlightened self-interest is the correct definition. In the last generation various outbreaks of fever were traced to a contaminated milk supply. There was great consternation. Laws were enacted giving power to the health department to destroy impure or impoverished milk wherever found and to punish the dealers in it. Inspectors were sent throughout the great grazing districts that supply New York's six million mouths with milk to make sure that the cows were healthy and well kept and the milk defended from contamination.

Long before this time the best city dealers in milk had taken care that their supply should be pure and rich and sweet; but the new laws—old laws now—made all other dealers comply with certain standards of excellence. Just as the best dealers kept ahead of their competitors before the era of State and municipal inspection, so they have still kept in the lead in the excellence of their product; but the whole city has benefited by the rule of cleanliness and care.

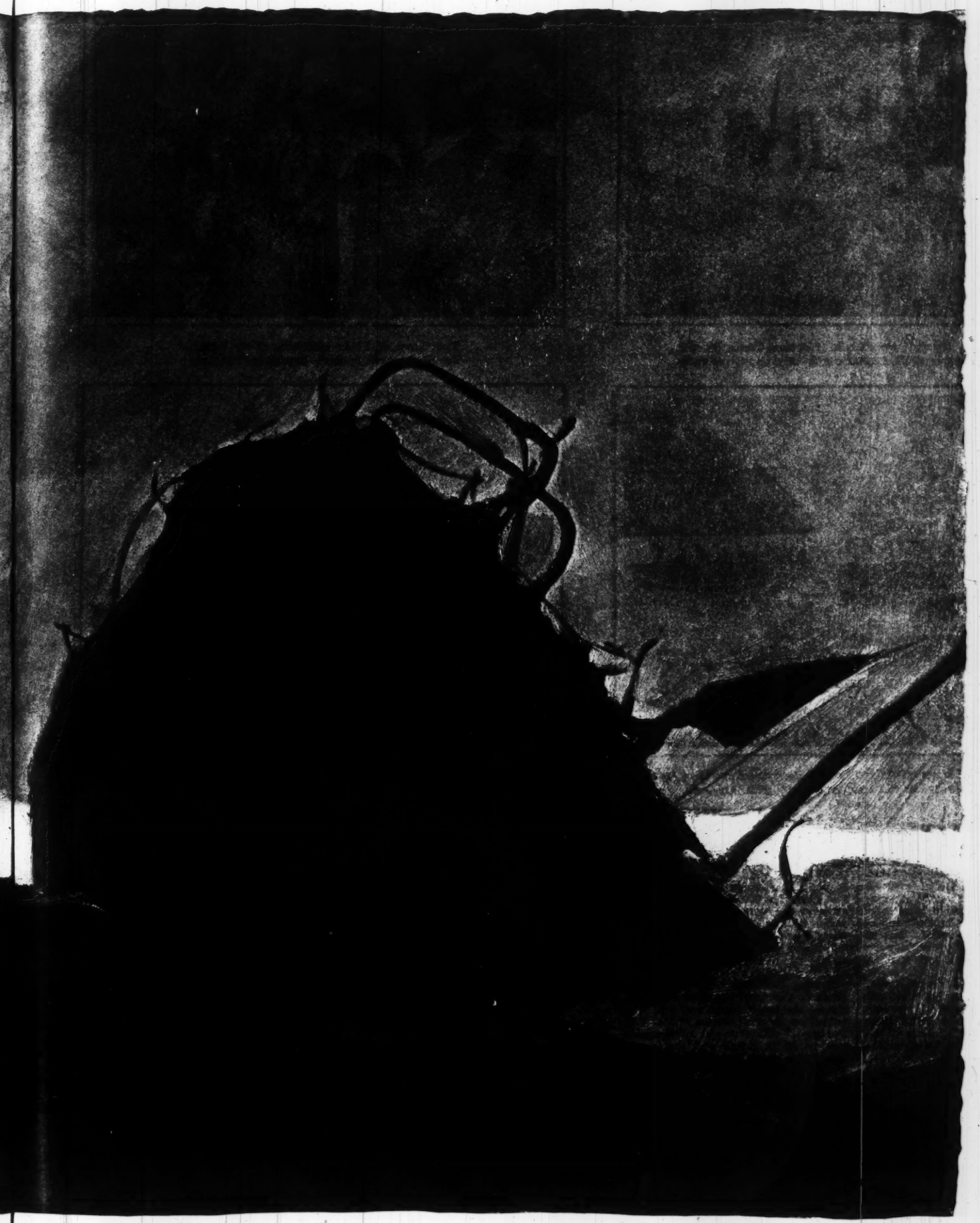
The territory affected is of huge size. Some of New York's daily supply comes from points as far as four hundred miles away—almost up to the Canadian border. The greater part of Father Knickerbocker's dairy farm, however, lies within a radius of two hundred miles of his doors. From this farm he drew last January 1,352,606 cans of milk, each can containing forty quarts, and 43,994 cans of cream.

And all of this is milked, gathered, cooled, shipped, and distributed under the most hygienic conditions. If the milk were kept and handled one-half as carefully after it arrives at the consumer's home, there would never be any trouble.

REQUIESCANT

WITH FLAG FLYING THE "MAINE" WAS SUNK IN DEEP WATER ON MARCH 16, 1912, WHILE ICERS STOOD TO QUARTERS AND A FUNERAL MARCH WAS PLAYED, FOLLOWED BY THREE VOLLEYS A THE SC ONE GUNS WAS FIRED AND WAS ANSWERED FROM THE CUBAN SHORE. AFTER THE "MAINE AD BE ROADS, BEARING THE BODIES OF THE DEAD, AND FROM THIS POINT THE "BIRMINGHAM" TRRRED

DRAWN BY WAYLWA



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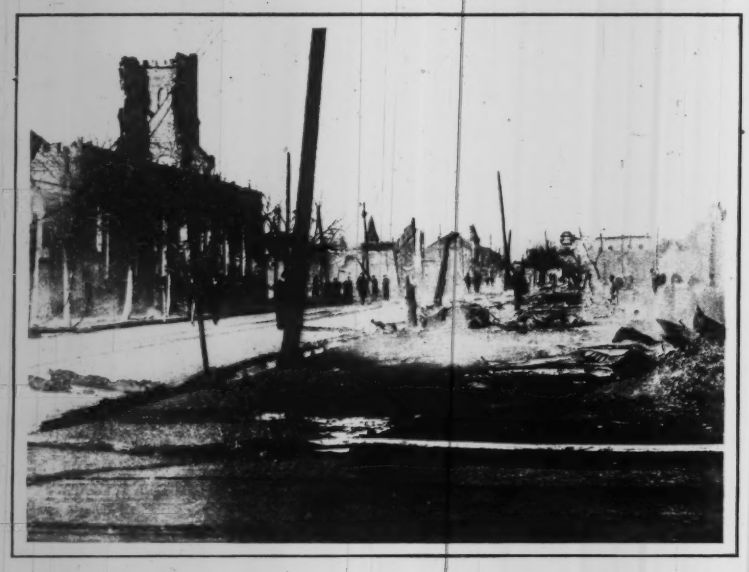
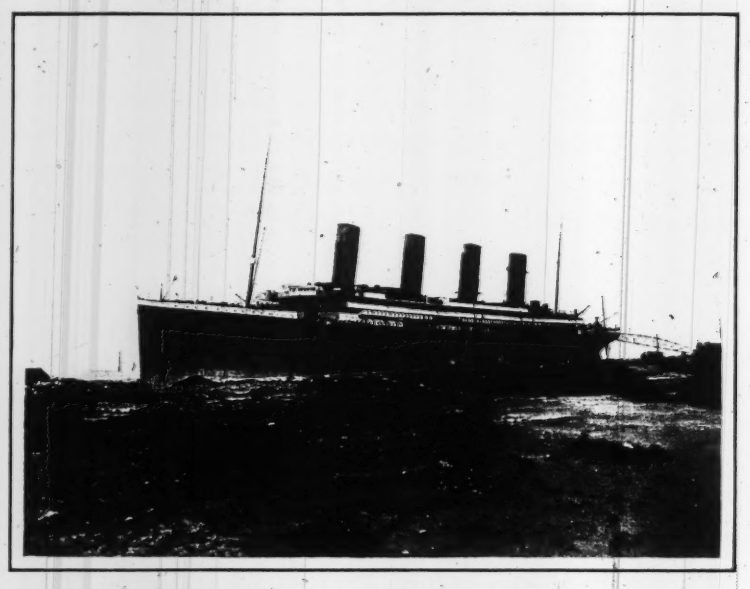
ICERS AND CREWS OF THE ESCORTING CRUISERS "NORTH CAROLINA" AND "BIRMINGHAM" THE SOUNDING OF "TAPS." AS THE VESSELS LEFT HAVANA HARBOR A SALUTE OF TWENTY- AD BEEN COMMITTED TO THE OCEAN BED THE TWO WARSHIPS PROCEEDED TO HAMPTON RRED THEM TO WASHINGTON, FOR INTERMENT IN THE ARLINGTON NATIONAL CEMETERY



Some of the damage wrought in Houston, Texas, by the fire which destroyed $7,000,000 worth of property recently

The Queen of Spain officiating at the launching of the new Spanish battleship "Espana"

French workmen off Cape Grisnez laying the new telephone cable which will connect France with England



The largest liner—the White Star steamship "Titanic," soon to be completed at Belfast

HAPPENINGS IN THE WORLD'S NEWS

A Mysterious Well

THERE are wells of many kinds: those which give gallons of petroleum, those which furnish water to surrounding populations, wells that are scarcely damp, and wells that periodically inundate the neighborhood in which they are found. But of all the wells in existence probably none compare in interest with a gas well in Hungary.

This well is situated in Transylvania, and the peculiarity of it is that it is not seen but heard. The gas escapes by means of an iron tube with such dreadful force as to produce a noise which makes it impossible to hear the human voice within a considerable radius.

Many and diverse attempts have been made to regulate and utilize the output of gas, but so far the only device which has succeeded has been to put an iron tube of twenty-five centimeters in diameter into the earth. Through this the gas has been escaping now for nearly three years. Engineers from various countries have been conducted to the spot and have thought out ingenious ways to make the gas available and to stop the dreadful noise caused by its escape. Every plan has failed. On one occasion the problem was believed to have been solved, but it was soon found that the gas had merely been turned aside in its course and was escaping in the same manner in adjacent territory after having followed a track for some distance below the surface.

The gas comes through the iron tube with the velocity of a cannon ball and it is estimated that there is a daily loss of a million of cubic meters, the value of which amounts to $6,000.

Two Thousand Million in Diamonds

FORTY-FIVE years have elapsed since the first diamond was found in Africa and it is calculated that since the development of the diamond-mines the world has paid more than $2,000,000,000 for their products. This represents a weight of 90,000,000 carats. If the immense loss from theft in the early years be taken into consideration, and the diamonds taken from Brazilian mines and others in different parts of the world be added to the estimate, it is probable that not less than 100,000,000 carats would be a conservative estimate of the output. The value of these in the rough would be more than $750,000,000; to this must be added the cost of cutting and the profits to the syndicate, to the exporter, to the middleman and the retailer.

Among the most famous diamonds are those of the royal house of Braganza and among the most valuable of the Braganza collection is that called "the King of Portugal," which weighs 1,680 carats. It was found in Brazil and has never been cut. The most important cut stone of Brazil is that called the "Star of the South," which was found by a negress in 1853. It was appropriated by the mine-owner, who gave her in return a pension for life. The stone was sold for $15,000, the new owner depositing it in the Bank of Rio Janeiro and receiving on this security a loan many times greater than the value paid for the gem. The diamond was at length sold for ten times the amount paid. It was finally acquired by a syndicate and cut in oval form at a cost of $2,600 by a firm in Amsterdam. An Indian Rajah offered more than half a million dollars for it, but was refused. A little later it was bought for the Gaekwar of Baroda.

Sawdust Bread

IN the city of Berlin there is a bakery that turns out daily twenty thousand loaves of sawdust which serve as food for horses. The composition of these, however, is one-third rye flour. It is said that in case of famine such "bread" would be sufficiently nutritive for human beings and not at all disagreeable.

Indeed, "sawdust bread" is not in its ingredients, perhaps, very different from certain food that savages extract from the bark of trees. The marrow of the sago palm furnishes a kind of white bread or flour. In Lapland a great delicacy is a little round cake made of the rind of the pine-tree very finely pounded and cooked in a frying-pan. In Kamschatka this rind serves the purpose of bread, as does also that of the common birch. In Siberia bread is made of a kind of moss which grows on the trunks of the fir. After this has been sprinkled with water it commences to ferment and forms balls the size of a man's head and is then cooked in deep ovens made of stones, the walls of which are first well heated. Travelers who have eaten this food say that it is not unpleasant to the palate.

War's Clearing-house

THE organization of services for the clearance of wounded from the battlefield has been remodeled by the French war minister on the basis of the figures relating to casualties in the Manchurian campaign. According to observations made in that war the average loss from rifle fire in an army corps of 35,000 to 40,000 men reached 20 per cent. of its effective, or at most 30 per cent. of an infantry division 15,000 strong. Hence the margin of loss to a division is 4,500 men: 500 to 600 killed and 4,000 wounded. Of this number, among the killed rifle fire is responsible for 85 per cent., artillery for 8 per cent., while the remaining 7 per cent. is accounted for by the bayonet. The wounded have been classified as follows: Able to rejoin the ranks after the first dressing 5 per cent., or 200; able to walk 20 per cent., or 800; amenable to transportation in a sitting position 30 per cent., or 1,250. Cases where it was possible to move the injured lying down amounted to 20 per cent., or 800; and men too seriously wounded to allow of their shipment and therefore left in the field hospital 25 per cent., or 1,000.

A French army corps has twenty-one horse-ambulance carts with two wheels and fifteen wagons with four wheels. Two hours suffice to organize and load a convoy of forty vehicles. The same time is necessary to its unloading and distribution. But a convoy cannot make more than two and a half miles an hour for five hours a day, or about twelve miles in the twenty-four hours. This shows how great a need there is for a motor service. Such service would quicken transportation to the clearance hospitals, where by means of a hanging apparatus for stretchers it would be possible to improvise four freight trains carrying 400 wounded lying down.

HARD TO DROP

But Many Drop It.

A young Calif. wife talks about coffee:

"It was hard to drop Mocha and Java and give Postum a trial, but my nerves were so shattered that I was a nervous wreck, and of course that means all kinds of ills.

"At first I thought bicycle-riding caused it and I gave it up, but my condition remained unchanged. I did not want to acknowledge coffee caused the trouble, for I was very fond of it.

"About that time a friend came to live with us, and I noticed that after he had been with us a week he would not drink his coffee any more. I asked him the reason. He replied, 'I have not had a headache since I left off drinking coffee, some months ago, till last week, when I began again here at your table. I don't see how any one can like coffee, anyway, after drinking Postum!'

"I said nothing, but at once ordered a package of Postum. That was five months ago, and we have drunk no coffee since except on two occasions, when we had company, and the result each time was that my husband could not sleep, but lay awake and tossed and talked half the night. We were convinced that coffee caused his suffering, so he returned to Postum, convinced that the coffee was an enemy, instead of a friend, and he is troubled no more by insomnia.

"I, myself, have gained 8 pounds in weight, and my nerves have ceased to quiver. It seems so easy now to quit the old coffee that caused our aches and ails and take up Postum." Name given by Postum Co., Battle Creek, Mich.

Read the little book, "The Road to Wellville," in pkgs. "There's a reason."

Ever read the above letter? A new one appears from time to time. They are genuine, true, and full of human interest.

Making Over a Big Railroad

METHODS EMPLOYED IN RE-EQUIPPING AND REHABILITATING THE MISSOURI PACIFIC-IRON MOUNTAIN SYSTEM

A WORK now in progress which is being watched with much interest is the rehabilitation of the Missouri Pacific-Iron Mountain Railroads. It is almost a rebuilding of a great railroad system. The rapidity with which this is being done shows the wonderful possibilities of modern methods when directed by proper energy and brains.

At the last annual election of the corporation, when Mr. Benjamin F. Bush was chosen President, it was announced that the owners of the properties contemplated extensive improvements in both the track and equipment. It was also given out that Mr. Bush would move to St. Louis to be on the ground to direct the work of rebuilding, re-equipping, and operating the lines.

Mr. Bush went to St. Louis on the first day of May this year and took charge of the properties. Within the five months he has been in control he and his associates have accomplished wonders in making over this railroad system. The right of way over the entire 7,300 miles has been cleared of all weeds and vegetation of all sorts, a large percentage of the track has been reballasted, and hundreds of miles of it laid with new heavy steel rails. Not only have these heavy rails been put on new work, but on various parts of the lines 65-lb. steel rails have been taken up and replaced with heavy 85-lb. rails.

The first move of the new President was to inspect every mile of track on the entire System, to familiarize himself with conditions everywhere. On these inspection trips he was accompanied by officials of the railroad. His idea was to discuss conditions with them and to have them enlighten him on any matter on which he desired information As he had to traverse a large part of the lines several times, and also had to travel over other roads in getting around, besides making several trips East, he actually traveled more than 25,000 miles—the distance around the world—before the inspection was completed.

But all the while Mr. Bush was engaged in this inspection he and his assistants were not holding back on the work of rebuilding and re-equipping the road. Men were set to work immediately on all tracks where investigation showed the need for ballasting, relaying rails or ties, or bettering conditions in any respect. Inside of three months there was not a defective tie to be found anywhere along the line.

One of the first edicts of the new management was that trains must run on schedule time. Within a couple of months the Missouri Pacific-Iron Mountain trains were adhering to schedule time closer than those of any other line in their section of the country.

The improved conditions were forcibly illustrated as early as the third month of the new administration. In that month, July, the records of the St. Louis Union Station showed that the principal trains of the road arrived as follows: The Limited train from El Paso, Tex., due at 7:25 P.M., which carries through passengers from Mexico and California, and the fast Hot Springs Special, due at 7:16 A.M., were both on time each day of the thirty-one. The Texas Mail & Express, due to arrive at St. Louis at 7:25 A.M. from San Antonio, which also carries a through sleeper from California; the California-St. Louis Express, due at 7:10 A.M. from Pueblo, carrying passengers from California; and the Hoxie-St. Louis Local Passenger train, due at 6:27 P.M., were each late only one day out of the thirty-one. The Colorado-St. Louis Special from Pueblo, due at 6:25 P.M., carrying through sleepers from Denver and California points, and the Kansas City-St. Louis Local, due at 6:10 P.M., were each late three days during the month. The Texas-St. Louis Special, due at 8:30 P.M. from San Antonio, with through passengers from the City of Mexico, was late on four days; and the St. Louis Mail & Express, due at 10:40 P.M. from Kansas City, was late six times.

In nearly every case the trains were only a few minutes late. Considering that some of these trains run over 900 miles on the Company's own rails, in addition to having to wait for connections at the originating point, this is a remarkable record for any railroad.

To insure arrival of trains on the scheduled time, the new management issued an order that even local passenger trains must be given the right of way over special trains of the officials of the road. Division Superintendents who ignored this order were severely reprimanded, even though the delay meant only a few minutes to the passenger train, but meant a half hour or more to the official's special train. They were given to understand that passengers who paid their fare were entitled to arrive at their destination on time, unless something unforeseen happened.

Over 50,000 tons of 85-lb. steel rail have already been received and put in the track, and more heavy steel rail is to be ordered within a short time. A new line of road reaching from Memphis, Tenn., to Marianna, Ark., now under construction, is being laid with this heavy steel.

Much new passenger and freight equipment has been received by the Missouri Pacific-Iron Mountain recently. Considerably more has been ordered and is to be delivered shortly. One lot just received contains 50 steel construction type passenger service cars, consisting of 11 chair cars, 8 regular passenger coaches, 2 divided passenger coaches, 15 baggage cars, and 14 mail cars. These cars are equipped with all modern improvements and the latest safety devices. This equipment is in addition to a big lot of passenger service coaches received a short time ago, including chair cars, regular passenger coaches, mail and baggage cars, and dining cars. These dining cars are the handsomest and most complete ever operated on an American railroad.

Fifty big Mikado-type freight engines have been received. This class of engine has a tractive power about 60% greater than the heaviest class formerly in use on the lines. Another order for large freight engines is to be let shortly, in which will be included at least two or three of the immense Mallet type.

Benjamin F. Bush

An order has also been let for fifteen gigantic, fast passenger locomotives of the Pacific type, which are to be used on the heavy through passenger trains. More are soon to be purchased.

On October 7 a contract was let for 2,400 freight-service cars. The contract includes 1,000 gondola (coal) cars of fifty tons' capacity each, 900 stock cars of forty tons' capacity each, and 500 flat cars of forty tons' capacity each; all to be delivered in the near future. Contracts will also be let in a short time for another large line of freight equipment, which will include box and flat cars, as well as stock, coal, and ballast cars.

In addition, all locomotives and cars on the System are being constantly gone over and necessary repairs made, with a view of getting all rolling-stock in as near perfect condition as possible.

Fences have been repaired, and station-houses and the iron work on bridges and trestles painted. Much attention has been given to the filling-in of trestles by raising embankments and the grading of track. In fact, everything on the line is being put in excellent shape.

Wooden bridges are fast being replaced with steel structures. Large steel drawbridges are being built at Paroquet, Ark., over the Black River; at Augusta, Ark., over the White River; at Judsonia, Ark., over the Little Red River; at Irving, Kans., over the Blue River; and on the new line between Memphis and Marianna, over the Saint Francis River. Between $300,000.00 and $400,000.00 is being expended on bridge work over the Kaw River at Kansas City. The new bridge on the Memphis-Marianna line is a particularly handsome and substantial structure. The bridge at Judsonia has double track and a draw span, while the Irving, Kans., structure has six 75-ft.-girder spans. Two steel bridges have also been completed across the Platte River just south of Omaha, Neb.

Large repair shops have lately been completed at Falls City, Neb., Hoisington, Kans., and at Kansas City, Mo. These embrace blacksmith shops, boiler shops, power plants, roundhouses for the locomotives, model coal chutes, new yards, and storehouses for the Supply Department. New terminals, with all proper facilities, have lately been established at Lexa and Eudora, Ark., these points being important terminals on the route for fast freight service between St. Louis and the Gulf. A large sum of money has been expended in reducing the grades between Atchison and Falls City, as well as on other parts of the System, thus reducing the cost of hauling freight.

Many new depots have been started and completed on the System recently, the most pretentious of which are the stations at Alexandria, La., Cairo, Ill., Carthage, Mo., Butler, Mo., and Little Rock, Ark. The last named, including the passenger yards, cost $800,000.00. The Cairo station and yards were almost as expensive.

The Missouri Pacific-Iron Mountain has perfected arrangements, in connection with other lines, for through dining-car service between St. Louis and New Orleans, as well as between St. Louis and Los Angeles by way of El Paso, in addition to the through passenger service between the same points.

The organization of the lines has also been changed from a departmental to a divisional system. Under the new divisional system, matters formerly delayed by being handled through the heads of the various Departments are promptly directed by division officials.

Another important change was the abandonment of the Claim Department as a separate organization. It has been made a part of the Legal Department. The old method usually required eight or ten months to settle a claim. Under the new system a claim is investigated by the Division Attorney and Division Claim Agent without undue delay, and, if found to be just, the claim is paid at once. This change meets with the hearty approval of both employees and the general public.

The Manager has established a Publicity Department to acquaint the public with what the road is doing, thereby creating a feeling of confidence and sympathy between the road and the people and bringing about a more friendly sentiment. There has also been established an Agricultural Department in charge of experts who learn by experiments for what the various kinds of soil along the lines of the road are best adapted, and this information is given to the farmers by means of pamphlets and lectures.

The tracks on the main line of the Missouri Pacific-Iron Mountain are now among the best in the West and South. An evidence of their excellent condition, and also of the alertness of the road's management, was shown when the Company hauled President Taft's special train from Sedalia, Mo., to Omaha, Neb., by way of Kansas City. When the train arrived at Atchison, Kans., shortly after one o'clock Sunday morning, October 1st, it was learned there had been a terrific downpour of rain and that a washout had occurred on the track to the north. All roads in that section of country had been washed out.

The President's train was tied up at Rushville, Mo. Swarms of workmen were ordered out immediately on the Missouri Pacific to repair the damage done by the storm. By 10:00 A.M. news was received that the trip could be made over the Missouri Pacific line to Omaha. The President's train arrived at Omaha at 6:40 P.M. Sunday, just eleven hours earlier than the first train to reach there over the tracks of any other road.

President Taft expressed himself much pleased with the service and the precautions taken for his safety. He stated that, after seeing the conditions, he was surprised that the train was able to get through that day. As an evidence of his appreciation, he presented to General Superintendent DeBernardi, who had personal supervision of the running of the train, a photograph inscribed:

"For A. DeBernardi, General Superintendent Missouri Pacific. With gratitude and best wishes.
October 1st, 1911. W. H. Taft."

As a result of the betterment of the road and its equipment, and the excellent train service now being provided, the management of the Missouri Pacific-Iron Mountain has become extremely popular with the people of the West and Southwest. This friendly feeling toward the road has been greatly enhanced by the democracy of the new President, who has met the people along the lines and made a most favorable impression. All over the Missouri Pacific-Iron Mountain territory only kind words are now to be heard concerning the road. ***

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Shut-in Genius

GENIUS, literary and otherwise, has sometimes insisted upon doing its work under peculiar conditions, which people of ordinary occupation would regard as foolish and unnecessary. No doubt there is something to be said on both sides. Some writers, like Scott and Trollope, have been as methodical as any bookkeeper or mechanic. But, in general, if a man is to do his best at any kind of creative work, he must be surrounded by favorable conditions. When Emerson had a lecture to finish, he was accustomed to go to Boston and take a room at a hotel, where he could be secure against any interruption. But men are often more in danger from their own laziness or fickleness than from any outside intrusion.

The French painter Géricault had an abundant head of hair, of which he was very proud. Being extremely desirous of finishing his picture, "The Wreck of the *Medusa*," he had his head shaved completely smooth, and, by the time the hair was grown again, his picture was done.

"I should never have done it," said he, "if I had not cut off my hair. I was seriously tempted, again and again, to throw away my brushes and rush out; but, disfigured as I was, I did not dare!"

Soitoux, the sculptor of a statue of the Republic that stands in front of the French Institute in Paris, found it necessary to complete this work without intermission except for the necessary rest. Being mechanically ingenious, he devised a contrivance that upset a glass of water upon his face after a certain interval of time had elapsed.

Victor Hugo, in writing, had all his ordinary clothes taken from his house, and dressed himself in garments so fantastic that he dared not leave his room in them.

The painter Ziem, another Parisian, had himself locked in his studio while engaged upon a certain work, and confided the key to a man whom he could trust, who was under orders not to unlock the doors, even if the painter himself should command him, in the sternest manner, to do so. A hole was cut in the door, and through it, once a day, food was passed.

Ziem worked in this way through the *coup d'état* of 1851, when Louis Napoleon usurped the government, and the most stirring events were occurring. The painter knew nothing about them. He had left orders that no letter or paper should be given him.

His picture finished at last, he came out of his captivity to find that France had passed from a republic into a monarchy.

A New Negro Type

THE United States census of 1910 reveals an interesting fact about the negro. Despite crossings with lighter races, the Southern negro is growing darker. Negroes were formerly classified as octoroons, quadroons, mulattoes, and blacks. Those distinctions have given place to a homogeneous type which is not pure negro, yet is not lighter in color than the negro of unmixed blood. The characteristic of the new type is an accentuation of the color of the skin. The negro of Louisiana, notably of New Orleans, is darker than were his ancestors. The type is of a softer and more velvety black than the Congolese; and the peculiar softness of color is accompanied by features of a less prominent African type, while the hair is less wool-like.

It is not easy to account for all the peculiarities of this latest type. They may be due in part to a change in the conditions of life and in part to the weakening of racial qualities. In general, the American negro is less strong than the primitive negro and he has less endurance than the negro slave. Patterson, a student of ethnology, thinks that there is not one negro of pure blood in North America, that the negroes are not real negroes, and that all the negroes have been subjected to alterations. Since their emancipation negroes have married according to their caprices. Under the rule of the cotton-planter no deteriorating marriage was permitted; the end in view was to improve the race and to produce strong and healthy slaves. All other considerations set aside, the race was more vigorous physically fifty years ago than it is to-day.

The Battle-field of the Blood

THE physical body is a battle-field where thousands of ultra-microscopic creatures war incessantly against one another. Man lives or dies, according as either one or the other of the fighting forces wins the fight. Man's life is the cause of the war and the thing at stake.

The parabolic lighting apparatus recently invented shows hitherto invisible details in the blood. It consists of a special condenser which halts direct rays by a central diaphragm in such a way that the particles in suspension in the liquid are illuminated laterally, so that they are seen like little stars against a dark field. The finest particles become visible because their apparent diameter is considerably enlarged; so, when aided by the special light, the microscope shows ultra-microscopic particles that cannot be seen with the microscope alone.

Dr. Doyen, by means of this apparatus, was the first to see the innumerable particles which he called bioblasts. Every leucocyte, or white cell, is full of bioblasts, whose refrangibility makes them brilliant. The bioblasts of the leucocytes move in the interiors of the cells with extraordinary rapidity. Seen with the ultra-microscope, where the globules in suspension are so illuminated that they look like little far-off stars, a drop of blood is like a bit of dark sky confined by a circlet and filled with shining celestial bodies.

When the organism is healthy there are a great many red corpuscles. Their function is to transport the oxygen necessary to life to the cells of the body. There are always—there must be while life persists—greater or less numbers of red corpuscles even in the blood of the sick. With them are the white corpuscles, but there are not nearly so many of the white as of the red. Some of them are very small; others are larger and have a multilobed nucleus. The last named are what Metchnikoff called microphags; others, which are still larger, are called macrophags. The macrophags have a luminous nucleus. The purpose of the white corpuscles is to devour germs of disease within the body.

When death approaches the white corpuscles, or phagocytes, are unable to devour intruding microbes. In the blood of a subject whose disease has reached the infectious stage the white corpuscles are much more numerous than in healthy blood. If the white corpuscles and the microbes of disease are placed together on a watch crystal they will be seen fighting one another. If a subject is convalescent the phagocytes are very active; they multiply rapidly, rush in upon the microbes, and soon devour them.

The Resistance of Human Bones

OUR bones are stronger than the strongest oak. Their marvelous resistance has been scientifically established, and it is known that the hollow bone resists incredible weights. A small bone a square millimeter in diameter will sustain thirty-three pounds in suspension without breaking, while a stick of the best oak of equal diameter will not sustain more than twenty-two pounds. Accordingly, the bone is stronger than solid oak by one-half. Nature has economized weight in bone-building, making them hollow and at the same time stronger than if they were solid and heavier. This principle has been followed in mechanics, to-day's engineers employing tubes of hollow steel in place of solid cylinders in cases where they must sustain great tension. Curiously enough, it is found in some of the prehistoric animals that the bones are solid, this circumstance doubtless adding to the unwieldy character of the frame, and suggesting that Nature tried first one way and then another before evolving an animal structure best adapted to survive and develop.

A Life-saving Globe

A SUBSTITUTE for life-boats, recommended to several foreign governments, consists of a hollow steel globe, flattened on the bottom, about eight feet in diameter.

With sixteen men inside and a supply of fresh water and provisions, it is reported to draw less than two feet of water. A twelve-inch ventilating pipe can be raised through the top of the globe when it is afloat. This pipe can, it is said, be drawn in and the opening quickly closed when desired. A small sail can be raised with the aid of the ventilating pipe.

The inventor of this device, a Dane, conceived the idea on seeing an iron water-tank afloat after a terrible wreck in which a number of lives were lost.

Unpardoned

"SOME things I never would forgive!"
So said you, dear, not knowing
That love is dead unless it live
All charity bestowing.

Now—you whose heart love so could brim
In dire, dire need—learn this of him
Whose all to you is owing:—
The one wrong man cannot forgive
Is the wrong of his own sowing!

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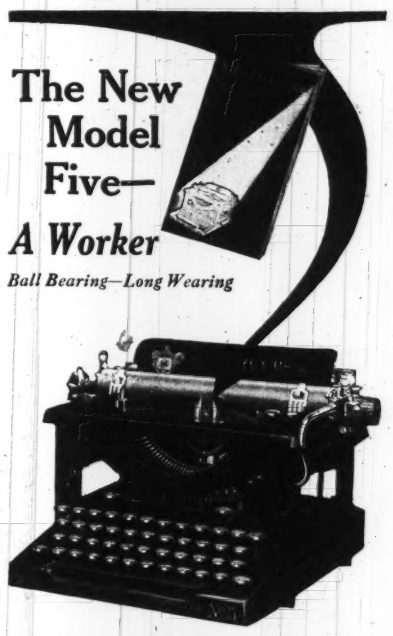

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The original models of **PAQUIN,** RUE de la PAIX, PARIS, will have besides the waistbands which for the Summer Season of 1912 will bear the firm's signature lettered "Van Dyck Brown on White Ground" a conspicuous **guarantee label** mentioning the name of the model and that of the purchaser. This label will be **sealed on the dress by a safety lead.** Every model presented as a Paquin creation and not bearing this label must be considered as a copy not coming from the firm's ateliers. **PAQUIN** reminds the public that his **only selling houses** are

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TEN BOYS *from* DICKENS

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Illustrated by GEORGE ALFRED WILLIAMS

PRESENTING as complete stories, in Dickens' own words, the boy lives of Oliver Twist, Tiny Tim, Tommy Traddles, Smike, "Deputy," David Copperfield, Poor Jo, Kit Nubbles, Paul Dombey, and Pip.

The volume is handsomely illustrated by full-page plates, each effectively portraying one of the boys. A book that every lover of Dickens will cherish, and that will furnish to young folks a delightful introduction to the reading of Dickens' works.

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(Imprint of R. H. Russell)

HARPER & BROTHERS, PUBLISHERS, N.Y.

FOR MEN OF BRAINS

Cortez CIGARS

—MADE AT KEY WEST—

Perfumed Plague-preventive Costumes

PERFUMED insulating plague-preventive costumes were prescribed and worn by the doctors of the sixteenth century for the prevention of contagious and infectious disease, and in 1619 the physician to the King of France, Louis XIII., wore a costume of Morocco leather night and day. In time of epidemics no one went outside his door without garlic in his mouth, incense in his ears, and goggles over his eyes. The king's doctor went about so protected and masked with leather. The nose of his mask was six inches long and so cut and fashioned as to isolate its wearer from bad air. Melchior Tuesslinus sketched a doctor of Marseilles on foot making his rounds in a preservative costume of Cordova leather and wearing a false nose filled with disinfecting vapors. His hands were gloved and on the first finger of the right hand was fastened a wand with which to take the pulse of the sick.

Modern bacteriologists regard the ancient protective costumes as rational and practical, since plague is spread by fleas. During the last epidemic in Manchuria the French doctors invented a preservative costume consisting of an ample robe of white "gauze" and an iodoform mask of the same material. The mask covered the nose and the mouth of the wearer. Another costume worn in Manchuria at the same time was composed of pantaloons, high boots, and a vest, all antiseptic. Gloves were worn with this costume and all the garments were air-tight. The antiseptic costume prevented the fleas from reaching the skin; and the dust was halted by the mask.

During the epidemic of cholera in France in 1832 many wore masks and gloves. Caricatures still preserved show the timorous in fantastic costumes completed by copper shields.

White Elephants

THE white elephant on the flag of Siam may serve to symbolize the dependence of the people of the country upon this animal, as well as to give expression to their reverence for its sacred figure. There are at present in Siam about three thousand domesticated elephants, but the number has been steadily diminishing during recent years. The price of elephants is at the same time going up, like the price of necessities in other parts of the world.

It takes about twenty-five years for an elephant to become full grown; but they attain their full powers only about ten years later. The length of life may extened to a hundred years or more. An average elephant weighs about three tons. Domestic elephants sell in Siam for about $2,500 for the full-grown males and about $1,750 for the females.

Traveling in certain parts of the country is practically impossible without elephants, especially in the northern regions and during the rainy season. They are also used extensively in working the teak-wood forests.

It is practically impossible to determine the number of elephants in a wild state. Herds numbering as many as two hundred animals are by no means rare. Hunting and capturing elephants as game is strictly controlled, and to engage in the sport one must first obtain a license from the government. For each animal captured one must then pay a fee of $150. Some people consider this tax a great hardship, since elephant-hunting is otherwise very difficult and very costly.

The amount of ivory exported during the year 1909-1910 was about two tons.

Municipal Pawn-shops

THE French call them *monts de piété,* but no satisfactory explanation for this nomenclature is forthcoming. The establishment of municipal pawn-shops in France was attended with more difficulty than was the case in other countries.

It is from Italy that the idea of municipal pawn-shops spread over the rest of Europe. A municipal pawn-shop was set up in Madrid in the year 1705, when a priest with very little capital opened up as an "uncle." The system was tried at Avignon in 1577, but it was not until the year 1777 that Paris itself was provided with a *mont de piété.* The National Assembly upset the monopoly and the business passed into private hands. The extortions of the pawnbrokers in time led, however, to a demand for the re-establishment of the governmental institutions. In 1806 Napoleon re-established the monopoly, regulating it by laws that are still in force. The interest charged amounts to about seven per cent.

In Paris the *mont de piété* is in effect a department of the administration, but in the provinces it is a municipal monopoly.

2,000,000 Stylish Ankles "Holeproof-Clad"

For Smart Women **For Up-to-Date Men**

A million men, women and children are wearing Holeproof Hose. There are two million neatly dressed ankles belonging to people who "know what's what," clad in these hose. A million people have seen the folly of "old-time" hose that wear out in a week. You'll see it, too, just as soon as you try "Holeproof."

Six pairs of "Holeproof" are guaranteed to wear without holes for six months. But that doesn't mean they are coarse or unsightly. The facts are quite the reverse.

Ask the dealer to show you the *silk* "Holeproof" for men and women—and the cotton "Holeproof" also, in the new Spring colors.

FAMOUS Holeproof Hosiery FOR MEN WOMEN AND CHILDREN

We pay for our yarn an average of 70 cents a pound. It is 3-ply Egyptian and Sea Island cotton, the finest, softest cotton that grows.

We could buy common yarn for 30 cents, but it would be 2-ply—coarse, heavy and hot.

Every pair of "Holeproof" is backed by our thirty-nine years of experience. These are the original guaranteed hose.

We spend $55,000 a year for inspection.

Don't you want to try such hose?

Carl Freschl

Look for the signature above on the toe of each pair, if you want to be sure you are getting the genuine "Holeproof." There are scores of imitations, so one must be careful.

Six pairs of "Holeproof" cost $1.50 up to $3.00, according to finish and weight. Silk "Holeproof," three pairs guaranteed three months—$2.00 for men's—$3.00 for women's.

The genuine "Holeproof" are sold in your town. We'll tell you the dealers' names on request, or ship direct where there's no dealer near, charges prepaid on receipt of remittance. Write for free book, "How to Make Your Feet Happy."

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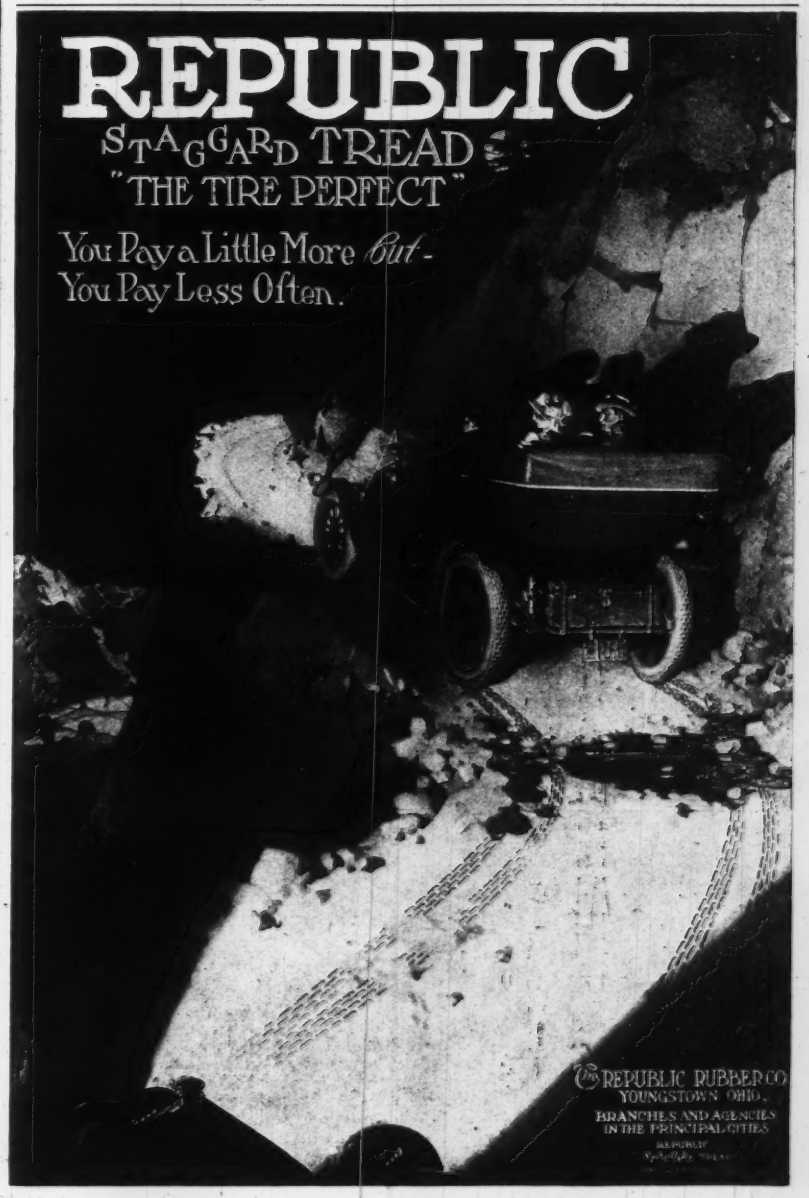
Are Your Hose Insured?

(299)



Hon. Thomas F. Conway

THOMAS F. CONWAY, who fills the Lieutenant Governor's chair of the State of New York, reached that exalted position simply by his own worth. He was elected with Governor Dix and the rest of the Democratic State ticket at the last State election.

Mr. Conway is a lawyer. He has been closely connected with a well-known New York law firm for several years. He began the practice of law in Keeseville, removing in 1890 to Plattsburg. Here he entered the firm of Weeds, Smith & Conway, which took over the business of the noted firm of Palmer, Weed, Kellogg & Smith, which had gone out of business on the elevation of Mr. Kellogg to the Supreme Court bench.

The firm of Weeds, Smith & Conway, of which he became the junior member, soon became one of the best known in the State. In 1900 the firm of Smith, Conway & Weed was formed as a branch of the Plattsburg legal firm to conduct business in New York City. The Plattsburg firm became known as Weeds, Conway & Cotter. Later the New York firm became Conway & Weed, with address at 32 Nassau Street, New York City.

They were engaged in many important civil cases in both State and federal courts. Mr. Conway was most successful in important litigation involving enormous sums of money and added fresh laurels to his reputation as counsel and orator.

His connection with the Democratic party has been a life-long one. He has maintained his reputation as an orator in State and national campaigns for many years and he has been the recipient of many honors from the Democratic party.

Notable among these have been: delegate to the Democratic National conventions held in Chicago in 1896, in Kansas City, 1900, and to the St. Louis one held in 1904. In 1898 he was nominated for Attorney General, State of New York; in 1900 he was again honored for the same position. In 1908 he received a strong support as a candidate for the Democratic nomination for Governor. That he never attained to these high positions was only due to the fortunes of war alike in politics as in war.

As presiding officer of the Senate he has won a high reputation for ability and fairness, as was testified to by the leaders of both parties at the close of the last session. His knowledge and grasp of public affairs of the State are surpassed by few men in public life to-day. Although a party man he has been independent in asserting his views of party and public policy.

Mr. Conway was born in Chesterfield, Essex County, New York, May 4, 1862. He belongs to numerous clubs and enjoys exceptional popularity especially among the people of the northern section of the State. ***

J. A. Bensel

JOHN ANDERSON BENSEL, State Engineer, has made some notable achievements in his chosen profession of civil engineer.

Chief among these was his work on the Pennsylvania Railroad. Entering the service of this mighty corporation as a rodman, he was in a short time promoted to be an assistant engineer; he passed quickly to the important position of assistant supervisor of the New York division.

It is principally by his connection first as engineer-in-chief and commissioner of the Department of Docks and Ferries of the City of New York, and, secondly, by his being made president of the Board of Water Supply with the supervision over the construction of a new system of water supply ninety-two miles in length, and the building of the Ashokan Reservoir in the Catskill Mountains, that he became widely known. In fact, a man to be reckoned with.

His great talent for water-front construction was exemplified by the modern Chelsea docks, built under his sole direction, and also extensive works on the water-front of Brooklyn. In fact, he completed some of the largest and most complete harbor works ever built in this country. In addition he put the Staten Island ferries under municipal control, giving to the public the splendid type of boats now in use instead of the old "tubs" run by private companies.

He was made president of the Board of Water Supply in 1908, involving the gigantic proposition of building the Ashokan Reservoir and the miles of piping to connect it with New York, the plan contemplating the construction of a deep rock tunnel under the Hudson River and many other amazing feats of engineering. The administrative work of the president of this department involved the expenditure of the enormous sum of $160,000,000.

In his private practice he much improved the dock-front on the Delaware while at work on the Girard property in Philadelphia.

While consulting engineer for the city of Newburgh it became his duty to make a valuation of water-front property in a suit instituted against the Pennsylvania Coal Company. This work attracted the attention of the Supreme Court, which adopted his valuation in its decision.

In 1910 Mr. Bensel was elected president of the American Society of Civil Engineers. He is also a member of the Institution of Civil Engineers of Great Britain.

He is a graduate of Stevens Institute of Technology at Hoboken, where he got his degree in the class of 1884.

Mr. Bensel was born in the city of New York on August 16, 1863. ***

W. E. COREY

WILLIAM ELLIS COREY is a standing example, a demonstrator, of what is possible for the youth of this favored country to accomplish. He retired from the enviable position of president of the United States Steel Corporation only last year to take up other work more congenial to him.

Yet this man was only born in 1866. Still in the zenith of his manhood, a few minutes' thought will make us reflect on his rapid progress from advancement to advancement. To-day he commands millions of dollars and an influence in the business world of incalculable benefit to him.

How did he achieve it? What legerdemain did he draw upon or what Aladdin's ring did he wear to bring him such marvelous success?

The answer to these questions lies in the plain and simple rules which ought to govern every American boy, and which luckily does permeate the spirit of youth in this country. For the boy who does his household chores for his parents, no matter how hard they seem, is infinitely better off than the pampered son of the rich. His independent spirit, learned in the rugged duties of his home, whether it is a farm or a city dwelling, tells on him in after life in the best manner possible.

W. E. Corey

William Ellis Corey was no "Willy" boy; he did not smoke cigarettes; he did not waste time in playing truant from school, or otherwise; but seeing his duty ahead of him, he attended to it and got there two feet front.

He was born in Braddock, Pa., May 4, 1866. His parents were Alfred A. Corey and Adaline (Fritz) Corey. This Braddock is in the very heart of the steel country, so naturally the boy grew up and became thoroughly imbued with the vital importance of the steel industry.

He was educated in the public schools of Braddock, Pa., afterward taking a course at Duffs College, Pittsburg, Pa.

Boston was known universally in this country as the Hub of the Universe principally because at one time it was the center of literature and art in this country. Now Pittsburg and the country adjacent to it might very appropriately, in a commercial sense, have the same title transferred to it, for, to many minds, the largest and most important industry in this country here has its center.

William Ellis Corey was lucky in his start in business. For after his course at Duffs College, in 1881, he entered, at the age of sixteen, the employ of the Edgar Thomson Steel Works, in their laboratory, under the veteran captain Wm. R. Jones.

Under this master—and he could have had no better—he early began to love his work, and to have work that is congenial to you is half the battle in determining your career.

In 1884 he was promoted to the position of weighmaster. Meanwhile he was making friends of those best able to help him. He was actually on the road to his wonderful advancement. Intuition was quietly working within him. He bent to his work incessantly. He never looked to the clock, but, like all successful men, he devoted all his time to serve his superiors more rather than less than what they required of him.

In 1887 he left the Edgar Thomson Steel Works and went to the Homestead Steel Works to work in the Open Hearth Department. In 1889 he was promoted to be superintendent of the Plate Mill and Open Hearth departments.

In 1893 he was appointed superintendent of the Armor Plate Department. Here he was in his element. For he had proved himself the master of the steel business to his masters in every branch, practical and executive. They had, by right of that mastership, to advance him to his proper status, and as head of the Armor Plate Department he entered on an administrative business for which he had been preparing himself for years.

The transactions of an Armor Plate Department of an immense steel plant in the United States extend anywhere from St. Petersburg, Russia, to Shanghai, China, and include Mare Island, Rio Janeiro, and other world-wide points in its scope.

Mr. Corey found his seventh heaven of delights in this work, which proved his eminent services to all concerned.

In 1897 he succeeded Mr. Charles M. Schwab as general superintendent, and in 1901 he was once again promoted as president of the Carnegie Steel Company.

In 1903 he assumed the wondrous position, dazzling from a business point of view, of president of the United States Steel Corporation, which position he voluntarily gave up in January, 1911.

That he attained such an unprecedented honor at the early age of thirty-seven years is simply to his credit, and it remains a shining example to the younger generation of boys of what a man can make out of his life if he only applies the perseverance, industry, self-education, and energy of William Ellis Corey.

His offices, at present in the Trinity Building, No. 111 Broadway, and which will be moved to the New Bankers Trust Company Building, May 1, 1912. Mr. James H. Slocum, who has been Mr. Corey's private secretary for upwards of twenty years, will have charge of same.

Mr. Corey is a member of these well-known clubs:

In New York—Metropolitan, Lawyers, Recess, Ardsley, and Automobile Club of America.

Washington, D. C.—Metropolitan and Pittsburg, Duquesne and Country clubs. ***

Alfred Chester Beatty

ALFRED CHESTER BEATTY, consulting engineer, was born in New York City, February 7, 1876. He received a thorough education both in private schools at Dobbs Ferry, New York, and at Columbia University, being graduated from the School of Mines there in 1898. He then took a special course in engineering at Princeton University, and entered upon the practice of his profession at Denver, Colorado, as a consulting engineer. He was engaged in general engineering work throughout the western part of the United States, Mexico, and Alaska until 1900. When John Hays Hammond, the mining expert, returned from Africa in that year, Mr. Beatty took charge of all his work in America. In 1903 he was appointed consulting engineer and assistant general manager of the Guggenheim Exploration Company, his principal line of work being first the operation of their properties. This department he soon gave up and devoted the greater part of his time to the examination and purchase of properties for them. Among the properties purchased were the Esperanza Limited, of Mexico, the largest and biggest gold producer in Mexico, Utah Copper Company, Nevada Consolidated Copper Company, and Cumberland Ely Copper Company.

Mr. Beatty took charge of the negotiations with the King of Belgium which resulted in the formation of the "Société Internationale Forestière et Minière du Congo." This Company controls an area of five hundred thousand square miles in the Congo Free State, and at present is exploring the country. In addition to his position as director, he has charge of the technical committee, being its chairman.

Mr. Beatty is also consulting engineer of the Utah Copper Company, and assistant consulting engineer of Camp Bird, Limited. He is president and director of the New River Collieries Company, of West Virginia, director of the Nevada Consolidated Copper Company and Intercontinental Rubber Company, vice-president of the America Congo Company, and director of the Guggenheim Exploration Company.

Mr. Beatty is a member of the American Institute of Mining Engineers, the Society of Colonial Wars, and the Sons of the American Revolution. He is also a member of the Metropolitan Club, The University Club, the Lawyers Club, and the Engineers Club of New York City, the Denver and University clubs, of Denver, and the Alta Club, of Salt Lake City.

He has recently opened independent offices in New York as consulting engineer. ***

Alexander Johnson

ALEXANDER JOHNSON was born in Brooklyn, N. Y., on November 16, 1869. As a boy he attended the Brooklyn public schools, finishing his elementary training at Public School No. 9. While at Bridgeport, Conn., he prepared for college at the Bridgeport High School. His technical education was acquired at the Sheffield Scientific School in Yale University, where he was graduated with the class in 1895 from the course in civil engineering.

Immediately upon leaving Yale he went to the West, where he was engaged for a year in sewer and highway work. He returned to the East in 1896, and accepted the position of assistant engineer under the late L. L. Buck. Then began his experience in the building and designing of great bridges, which has made him an authority on the subject. His first employment in work on this scale was in the building of the Williamsburg Bridge, the second of the four immense viaducts which now link Manhattan Island with the parts of New York City that lie beyond the East River. He was a young man, but his share in the work of construction was a large one.

In the year 1908, when the Manhattan Bridge was being built at a point between the Brooklyn and Williamsburg bridges, Mr. Johnson was appointed consulting engineer for the Department of Bridges of the New York City government. He was at once put in full charge of the work, and he swung the mile-long structure so rapidly into position as to set a new precedent in quickness of bridge erection. He also took part, as consulting engineer, in the designing and construction of the vast municipal office building which is being built near the City Hall.

Early in 1910 Mayor William J. Gaynor appointed Mr. Kingsley Martin, at that time chief engineer of the Bridge Department, to the post of commissioner of the department. Mr. Martin promptly named Mr. Johnson for the position which he himself had just vacated. As chief engineer of the department Mr. Johnson has followed his earlier policy of doing his own work thoroughly and well and leaving politics to others.

Mr. Johnson is a member of the Municipal Engineers' Club, of the Yountakah Country Club of Passaic, N. J., and a member of the American Society of Civil Engineers. ***

W. H. Parsons & Company

THE manufacture of newsprint paper is one of the most important industries in this country. The production of newsprint manufactured in the United States in the year 1910 amounted to 1,300,000 tons.

To W. H. Parsons & Company belongs the distinction of being the oldest manufacturer of newsprint in the United States. This company was organized under the laws of the State of Maine, having its principal place of business in the town of Topsham, Maine, and having its general office in the Trinity Building, No. 111 Broadway, New York City. Mr. David S. Cowles was the president of the company. He died on Monday, November 6, 1911, as this article was being prepared.

Mr. Cowles was born in Northampton, Massachusetts, on December 25, 1857. He was a descendant of a sturdy Pilgrim family that was among the first settlers in New England, and at the time of his death resided at Rye, Westchester County, New York.

His father, Hon. Edward Pitkin Cowles, was a leading lawyer of the Empire State and served on the Supreme Court Bench of New York. On the Cowles side Mr. Cowles was directly descended from John Cowles, an English pioneer who settled in Farmington, Connecticut, in 1635. Mr. Cowles's mother, who was Miss Sarah E. Boies, came from an equally splendid colonial family. Among her ancestors were David Boies, a first citizen of Blanford, Massachusetts, and Nathanial Ely, a famous colonial patriot of Longmeadow, Massachusetts.

After finishing a good school education, at the Quaker School, Stuyvesant Square, New York City, and later at the Park Institute, Rye, New York, Mr. Cowles, at the age of sixteen, left school and entered upon what has proved to be a most unusually successful business career.

He received an early training in banking with Messrs. Morton, Bliss & Co., New York City. In 1880 Mr. Cowles accepted a position with the Standard Oil Company as confidential man to Mr. William Rockfeller. Later Mr. Cowles became prominently identified with the finance department of that company. His capability for executive work led to his appointment as a director of all the merchandising companies of that corporation: namely, the Consolidated Tank Line Company, The Waters Pierce Oil Company, The P. C. Hanford Oil Company of Chicago, the president and director of the Standard Oil Company of Minnesota, a director of the Anglo-American Oil Company of England; he was also a member of the domestic trade committee of the Standard Oil Company. After eminently satisfactory service with the Standard Oil Company, in 1902, he resigned from that company and became associated in business with Mr. William H. Parsons, of New York City, in the manufacture of pulp and paper. The firm took the corporate name of W. H. Parsons & Company. Later, in conjunction with Hon. Francis C. Whitehouse, of Topsham, Maine, he acquired a controlling interest in the following corporations actively identified with the paper industry: W. H. Parsons & Co., Bowdoin Paper Mfg. Co., Lisbon Falls Fibre Co., Pejepscot Paper Co., Bay Shore Lumber Co., and Sagadahoc Towing Co. While president of the American Paper and Pulp Association Mr. Cowles did much to promote the growth of the industry and protect its interests. He attended the first Conservation Congress, held at Washington, D. C., on the invitation of President Roosevelt.

W. H. Parsons & Company, through its ownership of the Pejepscot Paper Company, operates the following mills:

Pejepscot Mills, Pejepscot, Me.
Bowdoin Mill, Topsham, Me.
Lisbon Mills, Lisbon Falls, Me.
Topsham Mill, Topsham, Me.
Great Salmon River Mill, Great Salmon River, N.B.
Cookshire Mill, Cookshire, P. Q.

This company owns large tracts of timber lands, situated in the Province of New Brunswick, and in the Province of Quebec, in the Dominion of Canada, from which it cuts a large part of its supply of pulp wood, the raw material used in the manufacture of newsprint paper. The company transports this pulp wood in its fleet of barges and ocean-going tug-boat, operated by the Sagadahoc Towing Company.

The policy of this company has always been to maintain its independence in trade, seeking at all times to preserve its standing among its competitors as well as among its customers, through the recognized superior quality of its manufactured product, and the sound financial and administrative policy which it has maintained since its organization, and for which Mr. Cowles was largely responsible.

It will be interesting to note in this connection that this company is one of the few owners of timber lands in this country that have adopted and are putting into effective operation the policy of reforestation, the cultivation of its own forest nurseries, and the organization in the forests of the system of fire protection and patrol. ***

Pope Yeatman

THE marvelous material advance of the modern world has been due to men of various talents and vocations, but to none more than to those of the engineering profession. To them are to be credited the mechanical wonders of municipalities and continents, gigantic bridges once undreamed of, all but incredible canals and railroads, the development of rich mineral deposits, and the spread of civilization itself throughout the world.

The subject of the following brief biography has been associated with this profession for twenty-six years, and during the latter and a goodly portion of that time he has occupied in it a notable standing.

Pope Yeatman is a native of St. Louis, Missouri, in which city he was born on the 3d of August, 1861.

He was educated in New Haven, Fort Leavenworth, and St. Louis. In the last-named city he matriculated at Washington University. From it he was graduated with the class of 1883, receiving the degree of Mining Engineer.

His active professional life commenced almost immediately after his graduation. It was initiated by his association with the St. Genevieve Copper Co., of southeastern Missouri, with which he remained for a year and a half.

In 1885 he was mining at Gage, New Mexico, and in 1885 and 1886 in the State of Sonora, Mexico. In the summer of 1886 he was connected with the Zacetacas mines of the republic just to the south of us. From December, 1887, to August, 1888, he engaged in consulting work and was also manager of the Jumbo Gold Mining Co., at Brickenridge, Colorado. From the last-named date until August, 1891, he was superintendent in charge of the mining, smelting, and concentrating work at the Doe Run mines.

The superintendency of the Empire Sinc Co., at Joplin, Missouri, then occupied his time until June, 1893, when he returned to consulting work and so remained until 1895, at which time he commenced his long and interesting associations with South African mining affairs.

With headquarters at Johannesburg he was, from 1895 to 1899, one of the mining engineers of the Consolidated Gold Fields of South Africa, Ltd., as well as manager of the Robinson Deep Gold Mining Co., and in 1899 general manager of the Simmer & Jack Proprietary Gold Mining Co., Ltd. From November, 1899, to July, 1904, he was general manager and consulting engineer of the Randfontein Estates Gold Mining Co., Ltd., of the Transvaal. At the close of this period he once more returned to general consulting work, continuing in it until he first associated himself with the various enterprises of the Messrs. Guggenheim.

From June, 1906, to June, 1910, he was the consulting engineer of the M. Guggenheim's Sons Co. His positions at the present time are those of general manager and consulting engineer of the Guggenheim Exploring Co., and consulting engineer of the Nevada Consolidated Copper Co., the Steptoe Valley Smelting and Mining Co., of Mexico, and the Braden Copper Co., of Chile.

Mr. Yeatman is a member of the American Institute of Mining Engineers, Mining and Metallurgical Society of America, the American Society of Civil Engineers, the Engineers' Society of St. Louis, the Institute of Mining and Metallurgy of London, and the Century and Engineers' and Rocky Mountain clubs of New York City. ***

Stephen Birch

STEPHEN BIRCH has gained distinction as an engineer because of the very substantial results from reports he has made in cases where large sums of money were invested on the strength of his reports. Perhaps the most notable work of his career has been done in Alaska, where he was the forerunner of the stupendous work of development undertaken by the Morgan-Guggenheim Syndicate, of which he is at present the managing director. Mr. Birch first ventured into Alaska in behalf of Mr. Henry O. Havemeyer. His report upon the Bonanza Mine resulted in the purchase of that property by Mr. Havemeyer and others, and the subsequent development there displayed to those in whose interest he has worked that his judgment was based upon the most expert knowledge of the subject in hand. This first trip impressed him with the possibilities of the new lands and filled him with a desire for further investigation of the territory. In the summer of 1899 he accepted an opportunity to accompany Lieutenant Lowe, of the United States Army, from Valdez through the interior to the Yukon River and Dawson City. This party, which consisted of five white persons, was the first to go through the territory with horses. Much valuable information was had and a route was picked over which to-day stretches the Copper River Northwestern Railroad. At the present time Mr. Birch is considered one of the best-informed men on the values of mining properties in Alaska. His knowledge has been gained at first hand and its value is made apparent by the confidence reposed in his judgment by the men whose millions have made Alaska what it is to-day and who are earnestly prosecuting the work of further development. As managing director of the Morgan-Guggenheim Syndicate Mr. Birch has every opportunity to put to the best uses that which he has gathered through his extensive prospecting.

Mr. Birch is a New-Yorker. He was born in the metropolis March 24, 1873.

Mr. Birch was educated under private tutors and in Trinity School of New York City, later entering the New York University. Before completing the regular course he left the University and took part in the surveying of various subway routes in New York City under William Barclay Parsons. Upon the completion of that part of the subway work Mr. Birch entered Columbia School of Mines as a special student and was graduated as a mining engineer in 1898. As soon as he left college he started for the West, where he was commissioned to make a general tour of inspection of mining properties. Upon his return to New York he was sent to Cuba to examine and report upon railway and land properties. At the conclusion of this work he went to Alaska on behalf of Mr. Havemeyer.

Besides his connection with the Morgan-Guggenheim Syndicate Mr. Birch is a director of the Northwestern Commercial Company, Northwestern Steamship Company, Alaska Steamship Company, Copper River Northwestern Railway Company, Katella Company, vice-president and general manager and director of the Kennicott Mines Company, also president Beatson Copper Co.

He is a member of the Engineers, Columbia University, City, and Mid-day clubs, of New York City; and of the Rainier and Seattle Golf and Country clubs, of Seattle, Washington. ***

Plimmon Henry Dudley

PLIMMON HENRY DUDLEY was born at Freedom, Ohio, on May 21, 1843. He was educated as a civil and metallurgical engineer at Hiram College, Hiram, Ohio. This institution conferred the degree of Ph.D. on him in 1902. He commenced his career as a civil engineer in construction work for the Atlantic & Great Western R. R. in 1868; he moved to Ravenna, Ohio, where he was employed by the county and State in making surveys. In 1872 he was elected city engineer of Akron, Ohio. The following year he became chief engineer of the Valley R.R. of Ohio, and was later employed by the Easton & Western Railroad Association to investigate different mechanical problems regarding roadbed and equipment. He first entered the employ of the New York Central & Hudson River R.R. Company in 1878, and has since remained continuously in their service.

Dr. Dudley is the inventor of numerous instruments and devices in connection with railroad operation. He has also made important discoveries in metallurgy and allied sciences. In 1874 he invented the dynagraph, which determines the resistance offered by trains to the roadbed; and in 1880 invented a track indicator. In 1884 he made the first announcement that fungi was the cause of decay in wood.

His experiments with steel rails date back to 1883. In that year he designed the first 5-inch rail used in the United States. This rail contained 23 per cent., or 15 lbs., more metal and was 66 per cent. stiffer than the 65-lb. rail then in use. It was rolled and put in service in July, 1884, at the New York terminal of the Harlem line of the New York Central & Hudson River R. R. In 1881 he used a 95-lb. rail, and in 1892 put the first 100-lb. rail in service at the same terminal. These heavy rails enabled the New York Central to be the first of American roads to institute high-speed trains, the Empire State Express coming into existence in the early nineties. The whole road was finally equipped with what is known as the 6-inch 100-lb. Dudley Section, and still uses this type of rail.

Mr. Dudley specified the use of a high-grade metal in the manufacture of his rails in order that the latter may withstand the increased intensity of wheel pressure caused by the fact that the deflection under the wheels is much less than with the former light rail. He is also the originator of broad-headed rails, which hold the wheels in position and prevent them from rolling. He recently came forward with the demand that a rail be tested three times before it is accepted from the manufacturer, instead of once as heretofore, and that every test must prove a certain percentage of flexibility. The steel-rail manufacturers at first demurred on the plea of extra cost, but were finally brought over to Mr. Dudley's way of thinking.

Mr. Dudley represented the New York Central at the International Railway Congress at London, in 1895, and was a reporter for the United States at the Congress at Paris in 1890, and that at Washington, D. C., in 1905. In December, 1902, he stated the seven fundamental principles which illustrate the American theory and practice of railroads in reference to the conjoint action of the locomotives, rolling stock, and permanent way. In 1911 he was a delegate at Berne, Switzerland.

He is a member of the American Institute of Mining Engineers, The American Society for Testing Materials, and the Royal Society of Arts, of London. He also belongs to the Engineers Society and the Sons of the American Revolution. ***

Henry St. Clair Putnam

HENRY ST. CLAIR PUTNAM is a native of Iowa, having been born at Davenport, in that State, on July 8, 1861.

The subject of this sketch went through the public schools of Davenport, Iowa. He then received a legal training, but he was ambitious to become an engineer, and subsequently entered the Rose Polytechnic Institute, at Terre Haute, Indiana. He specialized in electricity, and graduated in 1886 at the head of his class. He was awarded a scholarship, and in later years received the post-graduate degrees of M.S. and E.E.

His first employment was with the Thomson-Houston Electric Company, of Lynn, Massachusetts, with which concern he remained until 1887. The Thomson-Houston Carbon Company, of Fremont, Ohio, was then organized, with Mr. Putnam as one of its incorporators. He was made treasurer and a director. He also served as engineer, and during the next four years he introduced many valuable innovations in the manufacture of carbons, and was also the author of an accounting and cost system that was adopted to advantage by the clerical and technical forces. In 1891, Mr. Putnam spent some time remodeling the Brush Carbon factory in Cleveland, and subsequently he was appointed manager of the American Carbon Company, of Noblesville, Indiana.

In 1895 he resigned to become a consulting engineer. He opened offices in Chicago, but moved later to Philadelphia, where he was associated with Mr. Horatio A. Foster. He subsequently went to New York and entered into partnership with Mr. Lewis B. Stillwell. He is an expert on electric-traction matters, and has been extensively consulted by many of the New York roads. He has also done much construction work and has turned in special reports in connection with many highly technical engineering problems.

A fluent writer, Mr. Putnam is the author of a long list of papers on engineering subjects, including "Alternating Current Arc Lamps," "The Water Power of the Chicago Drainage Canal and its Electric Transmission to Chicago," "Conservation of Power Resources," "Power Economy in Electric Railway Operation," "Substitution of the Electric Motor for the Steam Locomotive in the Operation of Railways," and "The Electric Haulage of Canal Boats," the latter two in collaboration with L. B. Stillwell.

By invitation of President Roosevelt Mr. Putnam prepared his paper on "Conservation of Power Resources" for presentation at the first Congress of Governors of the States at the White House in 1908. He has also taken an active part in the work of the American Institute of Electrical Engineers.

Mr. Putnam is a member of the American Institute of Electrical Engineers, The American and National Geographical Societies, The National Conservation Association, the Iowa Society of New York, the Lawyer's Club, the Railroad Club of New York, the Engineers Club, the Fox Hills Golf Club, and the Cosmos Club of Washington, D. C. ***

Holt & Company

IF we look at the coat of arms of our city we will find the quarterings of the shield, between the crossed sail arms of a windmill, are a beaver above and below, and a flour barrel to the right and left. This device was doubtless selected in recognition of the fact that the early prosperity of the city was due in large measure to an old crown privilege granting the colony the exclusive right to manufacture flour and trade therein with the neighboring colonies and the West Indies. This industry helped greatly to build up the importance of New York City's export business, and although

Stephen Holt, 1777-1849

now the wheat centers have moved steadily westward, and the population of the United States has increased to such an extent that we hear it frequently predicted that shortly we shall produce no more flour than is required for home consumption, New York still maintains a considerable share of the export-flour business of the United States.

About the year 1801 Stephen Holt came from New London, Conn., to New York, and started the firm which has continued without break to the present day; at first under his own name, shortly after under that of Stephen Holt & Son; at his death under the son's name, Philetus H. Holt, and since 1852 under the name of Holt & Company, the present firm consisting of Chas. W. McCutchen, Philetus H. Holt, and William L. Amerman.

Holt & Company have made a specialty of flour suitable for the tropics, and the brands which they have established in the West Indies, Central America, Brazil and other South American countries, are the acknowledged standards in those markets, and their

Charles W. McCutchen

firm name is a household word in the trade of all of them.

The unbroken record of Holt & Company from the time when Stephen Holt first started in business to the present day in having weathered the many financial panics and crises, without once having had to ask favor from any one, is a tribute to the conservative business methods always pursued by the firm.

At present, the development of the wheat-growing industry in Canada and the enormous growth of the same in Argentina have supplied very keen competition in foreign markets, but the constant policy of the firm to thoroughly understand flour in all its bearings, and to supply its customers in the different markets with suitable flour, properly made and packed, has met with merited recognition, and in these days when the market is full of flour of many varieties, ground by different mills of very varying qualities of wheat, it is natural that a wise buyer should have recourse to conscientious

flour experts, that he may at all times secure flour of uniform quality suitable for his needs or market. ***

H. Ward Leonard

H. WARD LEONARD has patented and under application more than one hundred inventions, many of which are now an important part of our commercial life. They cover apparatus devoted to a broad range of uses, and among the more important may be named those relating to electrically driven reversible rolling-mills, electric-mine-hoists, locomotives, elevators, gasoline-electric trucks, transmission gearing for motor-cars, rheostats, automatic switches, electric heaters, and automatic electric-lighting systems for railway trains and motor-cars, electric distributing systems and boosters.

When he was twenty-three years of age he became associated with Thomas A. Edison as a member of the great inventor's personal staff of four engineers selected by Mr. Edison to introduce the Edison central-station system. One year previous to that he had graduated from the Massachusetts Institute of Technology.

It was a substantial recognition of his ability when at the age of twenty-six he was made general superintendent of the Western Electric Light Company, at Chicago, Ill. One year later found him senior member of the firm of Leonard & Izard, of Chicago, a concern which made many important installations of central-station plants and electric railways in many parts of the United States. In 1889 the firm was bought out by the Edison interests and Mr. Leonard became general manager of the light and power departments of the combined Edison interests for the United States and Canada with headquarters in New York City.

In 1891 he completed his inventions of the Ward Leonard System of Motor Control. By this system it is possible to secure a smooth speed control; to almost instantaneously reverse the motor speed from maximum in one direction to full speed in the opposite direction, and to reduce to the lowest practicable limit the amount of energy required when starting, reversing, and stopping. These results are obtained by an entirely original method of using electric energy. One year after inventing this system Mr. Leonard demonstrated its practicability and value to the Otis Elevator Company, and that well-known corporation at once paid the inventor a large price for the right to use it in elevator installation.

In 1892 Mr. Leonard gave to the world his Multiple Voltage System which was designed for operating motors and electric lights in factories, so that the motors in large plants could be economically operated at any desired speed. This system has been successfully applied in many large industrial plants throughout the world.

Another of Mr. Leonard's important inventions was the "Ward Leonard Double Arm Circuit Breaker," which has come into almost universal use.

The value of the Ward Leonard System of Control was demonstrated in battle during the Spanish-American War, where it was used upon one turret of the *Brooklyn*.

Since the Spanish War the Ward Leonard system has been generally adopted by the United States navy and all the ships are equipped with it, with a few unimportant exceptions.

In 1910 Lord Justice Fletcher Moulton, in handing down the decision of the highest court of England in a patent litigation in which Mr. Leonard's invention was involved, said, after reciting the difficulty of the reversible rolling-mill problem, "Ward Leonard met this difficulty in a very ingenious way," and, describing Mr. Leonard's invention, said, "It is no doubt a triumph on which electric engineering may well congratulate itself."

The system has also been extensively applied to mine hoists and by its use a speed of 4,000 feet a minute has been safely achieved. This is double the speed under the old system of operation and in addition increased power and greater handling capacity has been secured.

Mr. Leonard has devoted much of his time to inventions relating to the electric equipment of trunk-line railroads from water powers. His system is particularly valuable in mountain regions where heavy grades exist and by its use the expensive cuts in mountains, to eliminate these grades, are not necessary. By his system a train going down a heavy grade could raise one coming up to the extent of 60 per cent. of the needed energy, the power-house furnishing the other 40 per cent. The road would be equipped with an overhead wire supplying single-phase alternating current and transformed on the locomotive according to the Ward Leonard system.

The Swiss engineers were the first ones to fully appreciate the value of the Ward Leonard Single-Phase Railway system. It was early in 1902 that the Oerlikon Company, the leading electrical concern of Switzerland, secured a license under Mr. Leonard's patents and proceeded to build the Ward Leonard Oerlikon locomotive, which was soon thereafter successfully operated upon the State Railways of Switzerland. This was the beginning of the commercial development of the well-known single-phase railway system which now is recognized as the best form of trunk-line electrification and is being installed comprehensively for railway electrification in all of the leading countries.

Mr. Leonard has been a contributor to many technical papers and has delivered a number of addresses to scientific bodies. In June, 1892, he lectured before the American Institute of Electrical Engineers on "A New System of Electric Propulsion," and in February, 1894, before the same body, on "How Shall We Operate an Electric Railway Extending One Hundred Miles from the Power Station?" This was followed in November, 1896, by "Volts vs. Ohms; Speed Regulation of Electric Motors," and in November, 1902, by "Multiple Unit, Voltage Speed Control for Trunk-line Service."

His contributions to the technical press have included "How Can We Haul by Electric Locomotives, Freight Trains Weighing Twice as Much as Those Now Hauled by Steam Locomotives?" "Why Steam Locomotives Must be Replaced by Electric Locomotives for the Heaviest Freight Service" and the "Electrification of Steam Railroads."

For work along electrical research the Franklin Institute of Philadelphia, in 1903, conferred upon Mr. Leonard the John Scott Medal while he also was awarded the Gold Medal at the Paris Exposition in 1900 and at the St. Louis Exposition in 1904.

He has been vice-president and also a manager of the American Institute of Electrical Engineers, of which he has been a member since 1887. He is a life member of that organization. He is a member of many social organizations, including the Union League Club of New York. He is a director of the Mount Morris Bank of New York, and has been president of the village of Bronxville, where he resides in Lawrence Park.

Mr. Leonard was born in Cincinnati, Ohio, February 8, 1861, the descendant of a long line of American ancestors. Three of his forebears lived in this country prior to 1639. One of these was John Alden, whose name will live forever in the hearts of those who love Longfellow. Alden, as we all know, came to this country in the *Mayflower*. Solomon Leonard, another ancestor, came to this country in 1629 and in 1642, along with Miles Standish and John Alden, established Duxbury, the first settlement out of Plymouth. William Ward was another of the originators of the family in this country. He came to America in 1639.

The iron and steel industry in America was established at Taunton, Mass., in 1651 by one of Mr. Leonard's ancestors, and his great-great-grandfather was one of the most conspicuous figures during the period just previous to the outbreak of the American War of Independence and during the first year thereof. He was General Artemas Ward, who on May 19, 1775, was appointed General and Commander-in-chief of the forces raised by Massachusetts for the defense of the Colonies. Later, when General Washington was made Commander-in-chief for all the Colonies, General Ward was appointed second in command, being the first Major-General of the American army. ***

Olaf Hoff

A DISTINGUISHED engineer is Olaf Hoff, yet a plain and unassuming man to meet, as in fact all people who do things are. He is located in the Singer Building on Broadway, and "consulting engineer" is the modest sign upon his office-door.

Although he has done considerable work at bridge-building and constructed many notable edifices, his chief claim to fame lies in his now extraordinary subaqueous method of tunnelling, which he invented.

A few words of explanation will be in order. It was the construction of the Michigan Central Railway tunnel under the Detroit River which called forth the successful plan invented by Olaf Hoff. This united Detroit, Michigan, with Windsor, Canada, under the Detroit River. It was first projected in 1875 and abandoned till 1906, owing to insurmountable obstacles.

Then came out the marvelous proposition of Olaf Hoff. This was to build the tunnel on land and in sections drop it into a trench dug in the bed of the river by the use of floating dredges. The tubes were floated over the trench and sunk into position by filling them with water. They sank, but were upheld for several feet to permit the filling in of concrete, making a solid bottom. When the concreting was done the water was pumped out of the tubes and a concrete lining placed inside to prevent the steel from rusting. This invention (successful in every way), it is expected, will revolutionize all old ideas of tunneling under water, and it is a pleasure to record the fact that Mr. Hoff was granted letters patent for it on December 22, 1908. At present he is supervising the construction of the Vanderbilt Hotel at Park Avenue and Thirty-fourth Street, New York City.

He began his American career by entering the services of the Keystone Bridge Co., at Pittsburg. Next he became an engineer of bridges for the Mexican Central Ry. Then as a designing engineer with the Shiffler Bridge Works, Pittsburg. In 1885 he settled in Minneapolis, Minn., remaining till 1901. In 1891 he built a bridge across the Mississippi in that city. Then he took charge of the bridges and buildings of the New York Central and Hudson River Railroad. He has to his credit four hundred bridges renewed or reconstructed during his term of four years with that company. He became a member of the firm of Butler Bros. Construction Co. and general contractors, and the name read Butler Bros.–Hoff Co. Mr. Hoff became the vice-president and chief engineer. A few years later they dissolved and Mr. Hoff opened offices as consulting engineer as indicated in the beginning of this sketch.

He belongs to numerous societies, engineering and otherwise. He is happily married and has a growing and delightful family. He is a native of Norway and a graduated civil engineer of the Polytechnic Institute of Christiania, Norway. ***

William Hooker Bradley

WILLIAM HOOKER BRADLEY, the chief engineer of the Consolidated Gas Company, of New York City, and one of the most expert authorities on the subject of gas in this country, was born in New Haven, Conn., August 23, 1838. His ancestors were English people who became quite prominent in affairs in that State. An uncle of Mr. Bradley's mother, Dr. Charles Hooker, was one of the noted professors of Yale University and famous in his day.

Mr. Bradley received a common school education in his native town, serving thereafter in the mechanical department of a manufacturing concern for several years. He then entered the service of the Brooklyn Continental Iron Works, where a number of the iron-clad naval vessels were constructed during the Civil War.

He remained in Brooklyn until after the close of the War, when the excitement consequent on the discovery of oil in western Pennsylvania called him to that locality, where he established a machine and boiler shop and engaged in the manufacture of oil-well drills, tools, etc.

About 1870 Mr. Bradley returned to New York, going to work for the Continental Iron Works in its gas plant and holder department, planning, superintending, and erecting gas plants in various parts of the country. While engaged in this work Mr. Bradley thoroughly mastered much of the intricacies of the gas business, and succeeded in making himself one of the foremost authorities in that line in this country. The last plant erected under the supervision of Mr. Bradley while in the employ of the Continental Iron Works was that of the Municipal Gas Company in New York City in 1876. This was a water-gas plant of the Tessie Du Motay type, and has, with modifications, been in continuous operation in New York City from that date to the present day.

In 1876 he became chief engineer for the Municipal Gas Company, and continued in that position after the consolidation of several of the New York gas companies in 1884. In January, 1886, he was appointed chief engineer of the Consolidated Gas Company.

It was his report to the company in 1886, while chief engineer at the Forty-fourth Street works of the company, that largely influenced the starting of the great plant at Astoria, with its subsequent great development.

Mr. Bradley became a member of the American Gas Light Association in 1875. He is also a past president of the American Gas Institute; a member of the Society of Gas Lighting; an honorary member of the New England Association of Gas Engineers; a member of the American Society of Mechanical Engineers; the Engineers and Lotos clubs, of New York; a member of the Sons of the Revolution. He is also a member of the Metropolitan Museum of Art and the Museum of Natural History.

During Mr. Bradley's long connection with gas construction and operation he has seen many new developments in the art of gas manufacture. He has always been open to new ideas, and alert to adopt the best methods as they have come along. ***

George Carson Smith

RAILROAD president, financier, was born March 4, 1855, in Granville, Washington County, New York.

He was educated at Castleton Seminary, Vermont, and at Adrian College, Michigan, graduating in 1877. As instructor in languages, bookkeeper, newspaper correspondent, and shorthand reporter, he was self-supporting while in college and immediately after his graduation was selected by Hon. Charles M. Croswell, then Governor of Michigan, as his private secretary, having attracted favorable notice through his work as correspondent and reporter during the State campaign.

After a service of four years as Governor's secretary, during which he completed a course in the study of law, he entered railway service in Texas in 1881 as assistant to H. M. Hoxie, general manager of the Texas and Pacific and International and Great Northern railways, and upon the establishment of the headquarters of the Missouri Pacific system in St. Louis, Missouri, in the same year, he was made assistant to Capt. R. Somers Hayes, senior vice-president.

He became assistant general manager of the Missouri Pacific system in 1887; president and general manager of the Atlanta & West Point Railroad and Western Railway of Alabama in 1894; general manager of the St. Louis-Louisville lines of the Southern Railway in 1900.

His work in railway administration having attracted the attention of men of large affairs, he was selected in 1901 by Mr. George Westinghouse, of Pittsburgh, Pa., to represent his interests in the various corporations bearing his name, and has since been identified with the Westinghouse interests in Pittsburgh and New York City, serving as president, Lackawanna and Wyoming Valley Rapid Transit Company; Grand Rapids, Grand Haven, and Muskegon Railway Company; Westinghouse Inter-Works Railway; vice-president, Security Investment Company, Manila Electric Railroad and Lighting Corporation; Electric Power Securities Company, of Niagara Falls; Niagara, Lockport, and Ontario Power Company; East Pittsburgh Improvement Company; director, Westinghouse Air Brake Company; Westinghouse Church Kerr & Company; Union Switch and Signal Company; Electric Properties Company; Atlanta Water and Electric Power Company; Westinghouse Lamp Company, and other Westinghouse corporations.

Mr. Smith has, during the past year, established new connections in the field of construction and finance, becoming a special partner in the firm of James Stewart & Company, of New York, St. Louis, and Chicago, and representative in New York of The Canada Syndicate, Limited, of Montreal and Toronto, with offices at No. 165 Broadway and No. 30 Church Street.

He is a member of the Engineers' and Railroad clubs, in New York, and the Duquesne Club, in Pittsburgh, Pa., and resides at the Belnord Apartments, Eighty-sixth Street and Broadway, New York City. ***

Francis H. Kimball

FRANCIS H. KIMBALL is one of the best-known architects in this country.

In the lines of churches, theaters, and the modern sky-scraper he has planned many ornate and beautiful examples.

On commencing his New York business life he was associated with Mr. Wisedell, since deceased, in making extensive alterations in the old Madison Square Theater. The interior when finished was a "thing of beauty" unsurpassed in its artistic conception in that day. The Garrick and Fifth Avenue theaters, and the Casino were other Thespian temples planned by him. This led him to make a specialty of theatrical architecture. His reputation is second to none in that line.

Mr. Kimball is versatile. He is credited with having been the originator of all the great sky-scrapers in this city, the Manhattan Life Building, which is the pioneer in steel construction here, having been erected by him. Other splendid buildings designed for commercial purposes are the Standard Oil, Seligman, Brunswick, Trust Company of America, City Investing, Empire, Trinity, and United States Realty buildings.

Two of his creations, the Empire and Trinity buildings, are so placed as to attract attention from every visitor in this city. It's the large space of Old Trinity Churchyard which divides them. It gives a clear and uninterrupted view of their many beautiful features and will probably remain unobscured for a century and more to come.

The City Investing Building is another fine example of Mr. Kimball's work, and probably there is no other building where massiveness, dignity, and beauty are more artistically blended.

Mr. Kimball revolutionized foundation construction. It was the application of the caisson system. From the first experiments, which were crude and slow, the transition of the cylinders into the pneumatic caisson quickly followed. The first practical test was in the foundation of the Manhattan Life Building, of which Kimball and Thompson were the architects.

This innovation was adopted by every leading engineer in the country, so quick were they to see what a value it had.

Mr. Kimball was born in Maine, Sept. 23, 1845. When a mere boy he entered the employ of a relative who was a builder. He stayed five years, then entered the office of Louis P. Rogers in Boston. After eighteen months with that firm he was sent to Hartford to prepare the working drawings for the Chester Oak Life Insurance Company Building, and during the two years following prepared plans for a business block for the Connecticut Mutual Life Insurance Co.

Mr. Kimball was employed on the competition design for the capitol of Connecticut. Later he was engaged as supervising architect of Trinity College. He spent a year in London preparing for it under the tutorship of William Buyers, an expert master in French Gothic. ***

U. S. Brewers' Association

Patriotic and Historical Record — Fight Against Prohibition — Care of Workmen

THE United States Brewers' Association, organized in November, 1862, is an indirect product of the most momentous crisis of our national life. The beer tax, a part of the internal revenue system, then embracing every branch of commerce and industry, was the direct tangible cause of its organization.

There were other reasons, however; considerations of a nobler, a loftier nature. Patriotism, ready to sacrifice self-interest, was the most potent motive of those who organized this body and those who joined it.

Nearly all of them were men of German birth or extraction, and, like the vast majority of German-Americans, ardent Unionists. The attitude of the German-Americans during the Lincoln campaign and particularly during the subsequent events, when 200,000 of them obeyed the call to arms, is a matter of history.

Unbiased historians admit that the more important border States were saved for the Union by the German-Americans, and among them—as in fact throughout the country, even in the South—the brewers distinguished themselves by their willingness to give active support to the Union cause. Many of them gave their services and part of their wealth with an alacrity that greatly stimulated the patriotic spirit and prompted emulation.

The first revenue laws were crude and defective, and frauds were inevitable. The lawmakers sought remedies for these defects; but, above all, they looked for a tax-method ensuring safe and easy collection and the prevention of fraud. It was the organized brewers' avowed purpose to assist the Government in the accomplishment of these objects.

Between 1862 and 1865 they endeavored to render the faulty law as effective as possible, so far as their own industry was concerned. At every convention they appealed to their trade, by suitable resolutions, "to support the Government and attest their loyalty by the prompt payment of the tax." In order to impart compelling force to their appeals, they caused the appointment of local committees whose duty it was to prevent evasions of the law by all legitimate means, even to the extent of taking the initiative in the legal prosecution of delinquents.

When in 1865 Congress created a Special Revenue Commission with a view to perfecting the system, the United States Brewers' Association again volunteered its assistance, and at its own expense sent a committee to Europe for the purpose of studying the excise methods in the various beer-producing countries.

Under special instruction from the Treasury Department, the Special Revenue Commissioner attended the brewers' convention at which this committee reported. So deeply was this officer impressed with the report, its remarkable wealth of economic and statistical information, and the sound conclusions based upon it as to our country, that he recommended its transmission to Congress in its original form.

This was done, and thus the brewers' report became a public document, not inferior, as impartial critics admit, in any respect to the official dissertations on revenue of which that period was so prolific.

The opinion of the Department, that the "report would be of great benefit to the revenue," proved to be correct, as history attests. Congress adopted the system which was proposed by the brewers and which in its essential features remains in force to the present day.

Between the years 1868 and 1878 the work of the Association increased at a marvelous rate; its Washington Committee had to be constantly on the alert; many commercial questions arose which rendered necessary the formation of local associations; the Prohibitionists organized nationally and initiated a vigorous campaign; and old prejudices were revived against those engaged in the trade.

Fortunately, at the beginning of this period Massachusetts abolished Prohibition on the strength of a voluminous official report, the outcome of an investigation which resulted in a complete negation of every argument and presumption in favor of compulsory total abstinence. Following this came the famous scientific inquiry conducted by Dr. Bowditch, which induced thousands of physicians, journalists, clergymen, and authors to advocate the use of wine and beer.

Early in the '80's Prohibition gained the ascendancy in Iowa. The experiences gathered during this agitation and the Kansas campaign of a later period proved to be of inestimable value. They taught the brewers that by literary and educational efforts they must endeavor to induce the liberal elector to exercise his franchise;—for it was clearly demonstrated that in no instance had Prohibition been supported by a majority of those entitled to vote.

The necessity for such a course became all the more manifest at a later period, on account of several Supreme Court decisions sustaining Prohibition under the States' police power. The Association expended large sums of money and engaged the most eminent lawyers in order to test every constitutional principle involved in this question. All this naturally had the effect of invigorating the popular campaigns.

From this period dates the systematic dissemination of literature on the drink question by the Association; and its effect may be properly gauged by the fact that up to the era of the Anti-Saloon League of our time, proposed State Prohibition was defeated at the ballot box in ten States and abolished in all the New England States, excepting Maine.

During the period before mentioned the internal work of the Association progressed rapidly and favorably.

No less than forty-seven State and city associations were organized, and the membership of the parent body rose to over eight hundred, in spite of the fact that the number of persons engaged in brewing decreased very considerably from year to year.

Concerning Federal legislation against adulterations, this technical Committee assumed an attitude which secured to the Association the respect and confidence of the Agricultural Department and of Congress. Taking an active part in the First Pure Food Congress, the Committee submitted that clause, subsequently adopted by Congress, which gave to the manufacturer the right to co-operate with the government in the establishment of standards. That being granted, the Association consistently advocated the enactment of a Federal law, and had the gratification of being complimented for this attitude by several industrial bodies who had originally opposed Federal legislation. The patriotism of the brewers was again manifested during the Spanish-American war, when the brewing industry was subjected to and cheerfully paid a double tax.

In regard to the labor question, the Association has undoubtedly achieved much better results than many other American industries by a policy which combines firmness and determination in upholding the employers' rights, with a just appreciation of the workmen's condition and absolute fairness and genuine sympathy in dealing with all reasonable demands designed to bring about an amelioration of the wage-workers' lot.

The Association is now planning to introduce a system of compensating workmen for injuries sustained in the course of their employment.

During the past five or six years the local-option movement has assumed formidable proportions under the leadership of the Anti-Saloon League. On the other hand, a reawakening of the liberal spirit is noticeable everywhere. Thanks to the energy of many associations of manufacturers and other business men, who realize the destructive tendencies of the League and the utter lack of fairness in its agitation, the counter-movement goes on bravely, and, supported by the tactful and effective work of the German-American Alliance, with the thousands of societies federated under national leadership, will bring about in time, it is confidently expected, a revulsion of public sentiment wherever the natural rights of the citizen are threatened or suppressed. ***

National Fire Insurance Co.

Hartford, Connecticut.

AMONG the nation's strong bulwarks of safety as represented by the foremost score of the greatest fire-underwriting institutions the National Fire Insurance Company of Hartford appears with special prominence at this time, having just passed its fortieth anniversary.

The company's notable progress under the present management, with the Hon. James Nichols as executive, whose connection with the company has been continuous from its organization, for the first fifteen years as secretary and for the last quarter of a century as president, is evidenced by the fact that the National now has but a single peer in financial stability and magnitude of business among all fire companies in this country organized during the last half-century. But few of the still older companies have equaled the National's growth, and the presentation by the Board of Directors to President Nichols of a costly and exceptionally artistic silver loving-cup upon the fortieth anniversary was a fitting token of their appreciation of his successful management.

The National Fire Insurance Company was chartered June 4, 1869, but its commencement of business, with original cash capital of $500,000, and first policy issued, was upon November 29, 1871, the Hon. Mark Howard, president, Hon. James Nichols, secretary. In 1881 the cash capital was increased to $1,000,000.

The first serious disaster which the company encountered was the great Boston fire of November, 1872, when the National's net losses, met by prompt payments, amounted to $161,825.55. This occurrence was during the company's first year and before any large surplus had been accumulated, but the directors and stockholders voluntarily and immediately contributed $150,000 additional in cash to avoid legal impairment and to maintain the company's good standing; and although by later conflagrations the National's losses were of greater magnitude—notably the great fire in Baltimore in 1904, amounting to $920,-454.50 gross, and the San Francisco earthquake of 1906, where the National's losses aggregated a total of $3,382,176.81 gross—these enormous losses were paid entirely out of the company's accumulated net surplus, and there has never been any impairment of the capital.

The National has in the last twenty years more than quadrupled its assets and surplus, quintupled its premium receipts, and sextupled its earned reserve, and during the last decade, while the Home Office Underwriting Department has been largely under the jurisdiction of Vice-President H. A. Smith, the company's assets and premium receipts have more than doubled.

The National's Home Office, a fine building on the corner of Pearl and Lewis Streets, built in 1892 and 1893, and at that time seemingly of ample proportions for many decades, the company's needs have already outgrown, and to meet present demands the new annex on Lewis Street, of larger capacity than the original building, was erected in 1909–1910. It is a handsome six-story building of fireproof construction, its architecture harmonizing with the parent office, and all its furnishings and appointments are modern, exemplary, and typical of progress, also of sufficient capacity for the company's continued growth.

The following list gives the present personnel of the National's Directors, Official Staff, Department Managers, and Chief Assistants:

DIRECTORS

JAMES NICHOLS	L. A. BARBOUR
JOHN R. BUCK	FRED S. JAMES
HENRY C. JUDD	CHAS. CHENEY
FRANCIS T. MAXWELL	H. A. SMITH
CHAS. H. BRISCOE	GEO. H. BURT
RALPH H. ENSIGN	FRED'K F. SMALL

JAMES NICHOLS, President
B. R. STILLMAN, Secretary
F. D. LAYTON, Asst. Secretary
E. E. PIKE, Executive Special Agent
H. A. SMITH, Vice-President
G. H. TRYON, Asst. Secretary
S. T. MAXWELL, Asst. Secretary
CHAS. S. LANGDON, General Agent

DEPARTMENT MANAGERS AND GENERAL AGENTS

WESTERN DEPARTMENT
FRED S. JAMES, General Agent, Chicago, Ill.
GEO. W. BLOSSOM, Asst. Gen'l Agent, Chicago, Ill.
CHAS. RICHARDSON, 2d Asst. Gen'l Agent, Chicago, Ill.

PACIFIC DEPARTMENT
WILLARD O. WAYMAN & CARL A. HENRY
General Agents, San Francisco, Cal.

GULF DEPARTMENT
EMERY & NORTON, General Agents, New Orleans, La.

SOUTHWESTERN DEPARTMENT
FREZEVANT & COCHRAN, Gen'l Agents, Dallas, Texas.

MARITIME DEPARTMENT
DOUGLAS BROTHERS, Amherst, N. S.

ONTARIO DEPARTMENT
SMITH, MACKENSIE & HALL, Toronto, Ont.

WEST VIRGINIA
ALFRED PAULL & SON, Wheeling, W. Va.

FLORIDA
H. C. HARE & COMPANY, Jacksonville, Fla. ***

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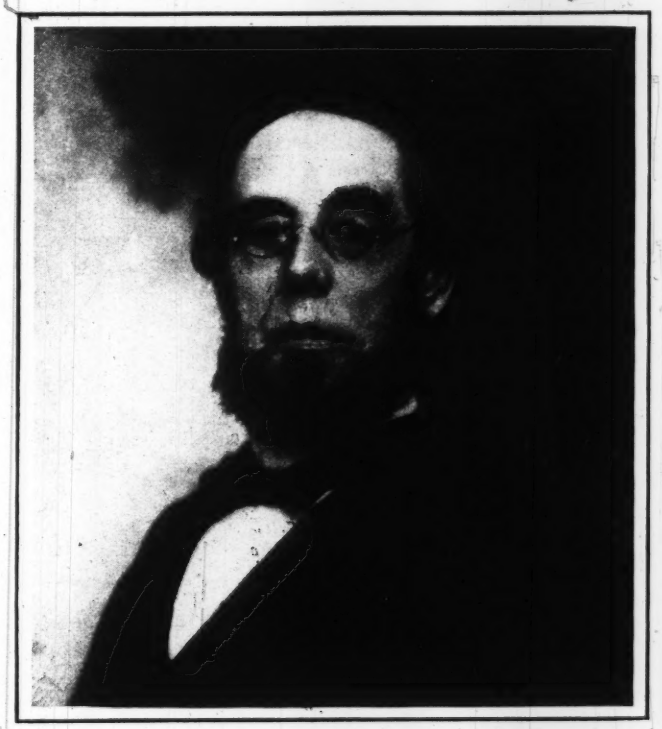

THOMPSON W. DECKER
1820—1902

THE beginning of a pure milk supply for New York City started in 1841. Mr. Thompson W. Decker was known for years by his motto, "Success to pure milk." His business flourished and in 1902, realizing the economic value of amalgamation, he was the prime factor in forming the present Sheffield Farms-Slawson-Decker Co. The combined interests at that time operated 109 delivery wagons and 10 stores, selling thirty-one thousand quarts of milk daily. His untimely death occurred shortly after and his last advice to his younger associates was, "Honest and conscientious dealings with the public bring success." To-day the Company operates 540 delivery wagons and 60 stores, selling one hundred and sixty thousand quarts of milk daily.

The Ætna Insurance Co.

THE Ætna Insurance Company is the leading and one of the oldest of this class in the country. It is located in Hartford, Conn., with branches all over the United States and Canada.

Its president is Wm. B. Clark; Henry E. Rees, secretary; A. N. Williams, E. J. Sloan, E. S. Allen, Guy E. Beardsley, assistant secretaries.

The directors are: Austin C. Dunham, Morgan G. Bulkeley, J. Pierpont Morgan, Atwood Collins, William B. Clark, Francis Goodwin, Charles E. Gross, James H. Knight, C. P. Cooley, Arthur L. Shipman, Charles L. Spencer, Lyman B. Brainerd, Charles A. Goodwin.

Finance Committee: W. B. Clark, F. Goodwin, Chas. E. Gross, James H. Knight.

Auditors: Atwood Collins, Charles P. Cooley.

Special agents—Home Department: J. B. Hughes, Oliver H. King, C. J. Irvin, H. O. Kline, H. B. Smith, James S. Middleton, F. W. Matthews, P. P. Tucker, Jos. M. Biggert, Jos. W. Russell, George W. Mills, E. C. French, W. C. Roach, Ralph B. Ives, O. M. Sadler, Jr., H. B. Nugent, C. L. Ruse, S. L. Johnson, Fred. C. Clarke, H. C. Upham, Arthur Lohmeyer, A. H. Wart, W. Ross McCain.

Marine Department: W. F. Whittelsey, Jr., marine secretary.

Western Branch, Chicago, Ill.—general agent: Thos. E. Gallagher; assistant general agent: L. O. Kohtz.

Chicago Branch—marine general agent: Louis O. Kohtz.

Pacific Branch, San Francisco, Cal.—general agent, E. C. Morrison; assistant general agent, A. G. Sanderson.

All of these general agents have branch offices in all adjacent cities in their own territory and an efficient executive staff to carefully look after the interests of the Ætna Insurance Company and its numerous patrons.

The presidents of the Company have been as follows:

THOMAS K. BRACE	1819–1857
EDWIN G. RIPLEY	1857–1862
THOMAS A. ALEXANDER	1862–1866
LUCIUS J. HENDEE	1866–1888
JOTHAM GOODNOW	1888–1892
WILLIAM B. CLARK	1892–

In a table of about eighty fire-insurance companies it is conclusively proven that the Ætna Insurance Company of Hartford, Conn., is in the soundest condition, for its income from investments amounted in 1911 to $845,694.13 and in another column is this significant statement—dividends paid since organization, $128,003,578.89.

The history of the Ætna Insurance Company makes interesting reading. First it began in the beautiful city of Hartford, which is entwined in the history of the United States in more ways than one, the home of Harriet Beecher Stowe, Mark Twain, and Warner. This city will ever retain a close affection in the hearts of American people. Here began the commencement of the highly successful business of fire insurance, which was only in the embryonic state in the earlier years of the last century.

The Ætna Insurance Company was incorporated at the May session of the legislature of Connecticut in 1819 with a capital of $150,000, with privilege to increase to an amount not exceeding $500,000.

In looking over the full records of the Ætna Insurance one is struck by the thoroughly unselfish spirit of the directors and officers who made the most Spartan examples of courage in sacrificing their own fortunes to maintain the integrity of the Ætna Insurance. Fortunately no fortunes had to be lost by these directors, who showed such Roman courage in face of peril and disaster. But the personality of these men permeated all the succeeding directors, which really is the secret of the great success achieved by the Ætna Insurance Company.

In 1827 perils threatened the existence of the Ætna which were only avoided by the prudence, sagacity, and personal sacrifice of the directors of the Company. The Ætna was the first company to issue a fire-insurance policy in Chicago in 1834. The document was on exhibition in the historical library of that city until destroyed in the fire of 1871. It was made by Gurdon S. Hubbard, who represented the Company.

In 1842 Joseph Morgan, one of the original directors, made an extensive circuit including New Orleans and Chicago and all intermediate towns. The journey, estimated at 6,104 miles, occupied ten weeks, at an average expense of $3.29 per day. A notable incident of the trip was a visit to Henry Clay at Ashland. Three generations have been represented in the directory of the Ætna Insurance Company by Joseph, Junius S., and J. Pierpont Morgan. Mr. Joseph Morgan kept a daily diary. The record, filling many columns, is now in possession of his grandson, Mr. James J. Goodwin.

By an amendment to the charter secured in 1839 the Company was empowered to issue policies against the hazards of inland navigation. Among the curiosities still preserved at the home office as a curiosity of inland insurance is a policy issued October 4, 1859, at the rate of one-half per cent., on fifteen negroes, valued at $16,000, bound from Glasgow, Mo., to Carrollton, Miss.

The Ætna Insurance Company has an ornate building in Hartford, Conn., which is a handsome addition to the many beautiful edifices in that city. ***

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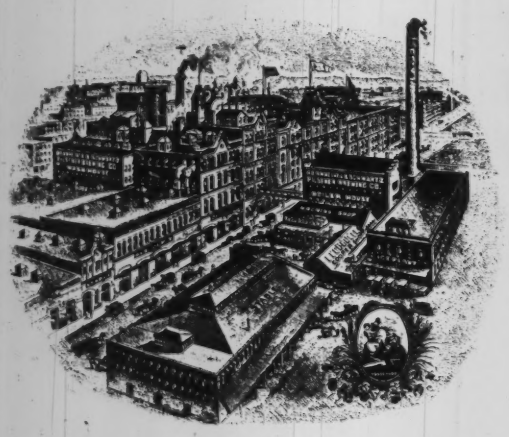

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Finance

By FRANKLIN ESCHER

One Bright Spot in the Industrial Situation

COPPER metal at twelve cents a pound means depression in the industry, small earnings, great difficulty in maintaining dividends. Copper metal at fourteen and one-half cents a pound means prosperity to the producing companies and a margin of profit sufficient to enable them to make liberal disbursements to their shareholders.

From near the beginning of 1910 to near the end of 1911 copper metal sold close to a twelve-cent level—most of the time a little above twelve cents a pound, but on one or two occasions below that level. Then slowly but very steadily the price advanced to around fourteen and one-half cents, where it stands now.

The difference is all the difference between depression and prosperity.

Looking into the cause of a rise or fall in the price of any great commodity, there are two things to be considered—conditions affecting demand and supply and possible interference by interested parties in the natural course of the market.

Let us first consider conditions affecting demand and supply.

It is perfectly plain even to the least observant person that the past few years have seen a great increase in the uses to which copper metal is put. One has but to glance around the room to see any number of objects made of copper wholly or in part which but a comparatively few years ago were made of some other material. The brass bedstead, for example, while it is no new thing, has not been in general use for any great length of time. Electric household appliances are all of more or less recent invention. Copper sheathing is used now in many instances where formerly no one would have thought of anything but sheet-iron. In these and a hundred other directions the red metal has come to be used in place of something else.

For this the low level of copper prices during the past five years is directly responsible. Back in 1905 and 1906 the metal used to range between fifteen and twenty cents a pound. Then came the big break in the autumn of 1907 when the metal dropped to thirteen cents—and stayed there. That made a very great difference. Copper metal began to be used for all sorts of purposes for which it had previously been altogether too expensive. With the metal at twenty cents, for instance, no one would think of roofing a house with copper. With the metal at thirteen cents it would be a much more reasonable proposition.

Very plainly is this increased use of copper shown in the way supplies on hand have gone down during the past twelve months. On the 1st of March last year the total domestic supply of copper amounted to 162,000,000 pounds. At the beginning of this month it amounted to 62,000,000 pounds. In the short space of twelve months we used up and exported 100,000,000 pounds more of copper than we produced.

That was during a time of very quiet general business. Had trade been active and the users of copper making money, what would have happened?

Production in the meanwhile has run along about on an even keel. In January of last year it amounted to 115,000,000 pounds. This January it was 119,000,000 pounds. In February, 1911, the output was 110,000,000 pounds. This February it was 116,000,000 pounds. There has been much talk about a "gentlemen's agreement" among the producers to reduce the amount of copper mined. No reduction in output has taken place. There has been much talk about the way in which the rise in the price of the metal would cause production to increase. No increase in production has taken place. January and February output, as a matter of fact, were both slightly below that for December, before the rise in prices took place.

There has been no startling increase in either the production or the consumption of copper. What has been happening is that our own needs and those of Europe combined have been running ahead of production so that there has been a steady dwindling away of supplies on hand. It hasn't been much each month, but the cumulative effect of the long succession of decreases has been very great. High-water mark in supplies on hand in the United States was touched in August of 1910, when the total reached 170,000,000 pounds. By the steady month-to-month reduction since then it has been cut down to 62,000,000 pounds. High-water mark in the world's visible supply of copper was reached in July, 1910, with 401,000,000 pounds. Since then that has been cut down to 178,000,000 pounds.

There is no mistaking the meaning of these figures. That the total supply of copper on hand should have been more than cut in half during the past couple of years shows clearly how great the consumption of copper has been. Here we have had a period when producers in most lines have been content to mark time. But in copper tremendous improvement has taken place. Supplies of the metal which in the summer of 1910 were considered one of the most depressing features in the situation have been so cut down that they represent hardly a month's production.

All very true if these figures show the actual state of supply and demand, say those who don't believe in the genuineness of the rise in copper metal, but how about what interested parties may have been doing to make the situation look stronger than it really is? How about this alleged big consumption of copper at a time when every other kind of business has been so quiet? How about these big exports? Do they represent actual deliveries to purchasers or is it not perhaps a case of the copper simply being shipped out of the country to get it out of the way and make supplies on hand appear smaller than they really are?

Legitimate enough questions in view of past performances in the copper-market, but easily answered by the fact that the improvement has extended over too long a period and been on too great a scale to have been brought about by mere juggling with figures. There are tricks in the copper trade as in every other. For a month or two months or even several months producers can make output look larger or smaller than it actually is and report sales to suit. But over a period of two years the thing is impossible. In such a length of time the true state of things is bound to come to light. The fact that production for some given month was more or less than for the month previous may perhaps be concealed, but not so a tendency running over a long series of months in succession.

Similarly with regard to exports made to get copper out of the way and to make domestic supplies look less than they are. At various times in the past we have seen this expedient resorted to and exports for a month or a couple of months unduly stimulated. But when it comes to an export movement running over a long series of months and involving such huge amounts of copper, the effect on foreign holdings cannot possibly be concealed. If we have been exporting an excessive amount of copper to get it out of the way it ought to show, at least to some extent, in European visible supplies.

On February 1, 1910, European visible supplies were 248,000,000 pounds. On February 1, 1912, they were 115,000,000 pounds. In the two years in which it is claimed that we were dumping our excess copper on the foreign markets, in other words, the European visible supply was cut down by well over fifty per cent.

It isn't necessary to go out looking for manipulation of supplies or juggling of figures to explain the great improvement in the position of copper which has taken place. The fact of the matter is that by the long period of low prices the use of copper in this country and abroad has been greatly stimulated without any corresponding increase in production having taken place. Supplies on hand, in consequence, have been greatly cut down, and the producers of copper have put an increased valuation on their product.

Will the advance in the price of the metal hold? That depends first upon whether consumption keeps up, and second upon the extent to which the higher prices stimulate production.

Consumption of copper on a big scale has come to stay, but it is true, of course, that as prices go up there is more or less of a tendency to restrict consumption. Bearing on the immediate future, too, there is the disturbed state of industry abroad. That is almost sure to cut down exports from this side. For the next few months, while a lot of copper will be used, deliveries will not improbably run lighter than they have been running.

Production, on the other hand, seems altogether likely to be stimulated to a certain extent. Mines which cannot operate profitably with copper at twelve cents can make money when the price is fourteen. That starts them producing. Greater efforts are made by the big producers to increase output.

Much of a rise from present prices does not, therefore, for the time being at least, seem likely. But with supplies of the metal in their present depleted state there seems equally little likelihood that prices will be reduced. A price for copper of between fourteen and fifteen cents for the next few months would not surprise a good many close observers of metal conditions.

And with the metal at that price all the good copper properties can show substantial earnings.

MILLIONS EASILY SAVED

WHY do not the railroads of the United States own and operate the sleeping, dining, and chair cars on their own roads, and thus increase their earnings by fifty million dollars a year? It is true that by failing to do this simple thing the railroad companies are deliberately throwing away that much sure profit. Probably the reason is that they are bound hand and foot by ancient custom; but it is a custom sure to be overthrown, and probably within a few years any railroad management that does not own and run its cars of this type will be considered a back number and a laughing-stock.

The records show that the profits from cars of this class are large and sure. Poor's Manual for 1911 states that in the year 1910 the earnings from 5,052 cars, valued at $74,496,058, amounted to $35,365,321. The cost of operation, repairs, etc., amounted to $20,839,570, leaving nearly $15,000,000 applicable to dividends and depreciation. The operation of such cars would cost less for the railroads themselves, which are well equipped for repairs and maintenance.

Time was when these cars were a luxury, patronized only by the wealthy, but now they are an everyday necessity used by commercial travelers, business men, women, and children. In fact, their use is so universal that it is difficult to secure accommodations except well in advance of the train's departure.

Twenty or thirty years ago, when the success of the operation of this class of car was problematic, the railroads were still in a state of development and willing to leave such operation to outside companies and to pay them mileage, and yet to-day, under settled conditions, they continue to use such outside companies' cars. The railroads thus have helped build up the greatest unprotected monopoly in the country. Behind no tariff wall and with patents expired, the operation of sleeping and chair cars is given by the railroads to one company—with a few noted exceptions, such as the Milwaukee, which operates its own equipment. Not only is competition stifled, but the railroads are losing earnings which should go to their own stockholders.

It is curious to note the wonderful power of custom in defending and maintaining utterly illogical and foolish conditions. There are in the United States at this moment no fewer than ten passenger-car-building shops capable of turning out promptly better designs of steel sleeping-cars, dining-cars and chair-cars than those now in use. These ten shops are so situated in diverse parts of the country that the repairs could be made without undue loss of time. If owned and operated by the railroads themselves, these cars could be exchanged when necessary, as freight-cars are now exchanged, but there are few instances to-day in which cars would leave one particular system. This was not the case before the big systems were established and their lines extended. It is true that to-day many roads operate their own dining-cars. Why should they not extend this ownership to sleeping and chair cars instead of guaranteeing a minimum traffic to an outside corporation? In this day, when competition is so much desired by our politicians, let the railroads cater to the public by offering their own attractive accommodations, instead of obliging people to travel in the cars of one company, built to suit that company and not the public. Let the railroads either reduce the price of the traffic or offer more for the money.

There was some legislation on the subject a few years ago, but after a slight reduction in the price of upper berths the commotion subsided, and the traveling man is still in the hands of a monopoly. He must pay the fixed price or use a day coach. Was not the owning of their cars by the railroads part of Mr. Brandeis's scheme of economy, when he said the railroads could save a million dollars a day? If not, he may increase his estimate of saving at least one-tenth, as this is the amount contributed daily by the traveling public which does not go into the coffers of the railroad companies.

Is the idea practical? Would it pay railroad companies to own the highest-class cars that run on their lines? Unquestionably the scheme is practical and profitable. The investment required by each railroad would not be large, when divided into its component parts, and the returns would certainly be adequate enough to justify the expense, judging by the published returns of the present car-operating company. Of late years it has been customary for the railroads to charge an extra fare for passage on fast trains. In many instances this excess is equal to the cost of the necessary berth. If the railroad owned the cars, this excess fare would serve to pay the expense of the berth, while the railroad would receive at least as much as it receives to-day, and the traveler would be benefited in pocket.

Travel is the life of trade. In every business travel is necessary, and in many branches success depends almost entirely upon the efforts of the men who scour the country and persuade merchants to buy goods. Is it not conceivable that to some extent the present excessive traveling expense affects the cost of living by increasing the general expense of merchandise, which expense the ultimate consumer must shoulder when he purchases the goods? Will the railroads do their share in reducing the cost of living by owning and operating their best cars at fair competitive rates, or must the public continue to pour its good money to the extent of thirty-five million dollars per annum into the coffers of one private corporation?

It would be arguing about an axiom to dispute the superiority of steel cars over wooden cars in the vital matter of safety. Of what avail are speed and comfort—even luxury—in railroad journeying if there goes with them the ever-present danger of death or maiming?

Recent wrecks have demonstrated anew the desirability of steel construction. If the railroads would own and operate their own cars, the change from wood to steel could be quickly made, as the ten car shops mentioned could all be called upon to build the steel cars. As it is now, they must all be built by one company—namely, the one which operates the cars.

The railroads have received their franchises from the people. Let them now grant the people just recompense by owning and operating their own sleeping, dining, and chair cars on a fair percentage of profit. The operation of such cars is certainly an essential part of railroading. There is no difficulty about their manufacture. It simply requires initiative on the part of the railroad managers to break away from a custom which was to some extent necessary in their infancy, but does not now exist. ***

Famous Kitchens

AMONG the most richly appointed and best-equipped kitchens in the world that of the Shahs of Persia stands easily first. The utensils and the movable apparatus in it are estimated to be worth two million and a half dollars. All the table service in use for cooking and testing purposes is adorned with gold, stew and sauce pans included. The covers of dishes are also of gold adorned with precious stones. The chief cook, employed to make especially appetizing dishes for the Shah, uses warming-dishes, ladles, and even coal-shovels of gold-plated silver. It is said that the royal household attaches much the same importance to gold dishes that Western nations do to sterilized ones, and a cook detected in using an ordinary dish in preparing a meal for the monarch was, some five years ago, dismissed and fined.

Probably the kitchen of the Queen Dowager Alexandra at Sandringham in England is the second most splendidly furnished kitchen in the world as far as appointments are concerned. It is much better appointed than the corresponding kitchens at Windsor or Buckingham Palace, the Queen Dowager having superintended the details herself.

The kitchen of the French president, though thoroughly up to date and a model of convenience and cleanliness, is said to be as unpretentious as possible, the dishes being of silver indeed, but quite unornamented. Ladles, toasting-forks, and other kitchen utensils are of the same model as those used in most well-to-do families throughout the country. Nevertheless, it is in the kitchen of the French president that are prepared many of those delicate morsels the receipts for which are eagerly sought throughout the world.

Gold, Diamonds, and Iron

BY combining the most trustworthy data obtainable, the French scientist, Geoffroy, estimates the total amount of gold that has been extracted from the earth within historic time at 17,000 tons, valued at $12,000,000,000. The total amount of diamonds taken from the earth during the same period is estimated at about twenty tons, valued at $700,000,000. Basing the comparison upon weight, the amount of iron daily produced is nearly equal to the total quantity of gold taken from all the earth's mines since they were first opened.

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Suites consisting of Parlor, Bedroom and Bath, $10.00 upward; larger Suites in proportion.

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America's Great Insurance Capital

By Henry W. Peters

In southern New England, just a century ago, some able, hard-headed, far-seeing citizens of the cities and towns did some thinking. They were traders owning their own ships, merchants, shrewd manufacturers, and prosperous farmers. Their sons and grandsons formed a large part of the breed that years later became trade princes of New York and began the settlement of the West commercially. These old New-Englanders had the magic art of saving a dollar, heaping others along with it, and setting them at work. Their skill was in inventing opportunities. Along the Connecticut Valley were some of the keenest. They heard rumors and stories of the business of insurance, then scarcely known in America. They sat down and figured. By every test of business forethought it looked good to them.

There was no trouble in finding dollars in the Connecticut Valley when it came to enterprises that were on a firm foundation. Thus, while American insurance, brought over from England and established first in Philadelphia well toward the middle of the eighteenth century, did not grow to any extent either in Philadelphia or New York for a hundred years after that, the nineteenth century had hardly begun before it got a firm footing along the Connecticut River. Hartford rapidly became its center and ever since Hartford has held its prominence. That city has gathered within its boundaries many manufactories, big banking interests, and beautiful homes, but above all it is the great American "city of insurance," the headquarters of over a dozen big companies as well as several of the largest foreign insurance corporations. At a low estimate Hartford has at least twenty million dollars in capital invested in her insurance companies. Their assets foot up to far more than a hundred million.

Conservative, needing-to-be-shown Connecticut worthies were from the beginning the chiefs of these enterprises. They have a long, unbroken record of prosperity. In Hartford originated accident insurance; liability insurance flourished as scarcely anywhere else; a genius devised a great specialized business on steam-boiler insurance. Fire and life insurance grew apace. By 1830 both of these latter were well in harness and earning good profits. It was not until nearly twenty years after that New York began to get into the swing of the new idea.

The Connecticut Yankee never proved his business acumen better than when, almost within hearing of the War of the Revolution, in the State capital on the bank of the Connecticut River, he commenced setting up one by one his insurance offices. Of course, Hartford capital was not alone in this "good thing." The insurance records of the State show that almost every town of the State had its insurance company. These were generally "mutuals." Everybody in a certain group insured every one in it. When one lost all the others paid. The "mutual companies" and other insurance concerns naturally spread far beyond the confines of a single State. Massachusetts had plenty of them. Springfield and Boston were centers also. It may have been chance, or perhaps the moneyed Hartford man had a little more far-sightedness, push, and business skill. However it was, Hartford got the start in the fascinating new investment field and held it.

The West scarcely began to be settled before the insurance men from Hartford were covering the lands of the pioneers with seven-leagued boots. Their men traveled everywhere and set up agencies at almost every cross-road. From their old-fashioned desks in old-fashioned counting-houses severe-faced, deep-thinking men sized up every farm-house, settlement, and developing city. Only a few months ago one of the Hartford fire companies reproduced—and distributed the reproduction widely—a treasure it has unearthed from its archives. It was a policy written on the home of Abraham Lincoln while he was a struggling lawyer and long before any one ever thought of his becoming President.

It is interesting to compare this "steam-up" that the old masters of the middle of the eighteen-hundreds developed and see what has come out of it. In 1810 the first fire-insurance company in Hartford began. In 1910 this company stood first in all America in premiums paid in, first in losses paid, first in gross fire risks in force, first in gross fire losses paid since establishment. The figures are worth giving in detail. It took in $14,800,000 in premiums and paid out $8,472,000 in losses. It had $2,367,155,596 fire risks in force, and in the hundred and two years since it was founded had paid out one hundred and fifty millions of dollars.

"For of all glad words of tongue or pen, the gladdest are these: 'It might have been.'"

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Figures roughly compiled show that in fire the Hartford companies have twelve and a half millions capital, over one-seventh of the capital of the entire country. They have more than one-seventh of the total fire-insurance assets, one-sixth of the income, and pay nearly one-sixth of the total losses. These figures are notable when it is considered that the policy of the companies within the shadow of the dome of the Hartford Capitol has been to be conservative before everything else.

It is said that Hartford companies wrote the first employers' liability insurance ever written in the United States. This was originated, according to the records, in 1866, and to-day the two largest Hartford companies together gather in a third of the total of thirty million dollars of premiums collected in the United States in this form of insurance. One of the beginnings of effective American advertising was in connection with accident insurance about that same time. The country was flooded with pictures and whimsical, ingenious verse in which the name of the pioneer company was worked into the refrain. Both these ideas, then novel, though since well established and highly successful and profitable, at once "caught on." The little city on the banks of the Connecticut was seen to be fertile in expedients for getting new kinds of business in its great specialty. The years only added to Hartford's reputation. Later along came a group of men who proposed to insure steam-boilers and carried that idea through triumphantly. These men and their company built up a business that has become renowned from the Atlantic to the Pacific. They not only developed their idea so as to insure steam-boilers, but added to it so as to inspect them and even to furnish their clients with the most approved and most successful designs.

Hartford has always had one great advantage: from the beginning it has been not only the city of insurance capital, but the city of insurance conservatism. The very name Hartford has stood for a great deal in insurance. It has conveyed a sense of security. Behind every company, the whole country has known, have been solid citizens, with houses and lands behind them, money in their breeches' pockets, men whose stability was their very life. The letters "O. K." could be set upon every Hartford enterprise. When insurance speculations were abroad elsewhere, Hartford raised her voice against such practices and made it evident that her skirts were clean. And they have always proved to be.

There were giants in Hartford insurance for many years. One of them was Jacob L. Greene, for more than thirty years the foremost defender of the conservative "mutual" system of life-insurance. Greene had distinguished himself in the Civil War, and after the war ended became a life-insurance agent. He had a mathematical mind and quickly rose to be a great executive, taking charge of one of Hartford's most important companies at a critical period. His aim was different from that of many of the insurance chiefs. He campaigned for absolute safety in management, the consistent development of the old, long-established "mutual" principle, the furnishing of life insurance at the lowest possible cost.

Jacob L. Greene's theory of insurance was not far from being the Hartford creed in fire, life, accident, and every other form of policy through the year. An "appreciation" once said of him:

"Life insurance was part of Mr. Greene's very being. It was not an occupation, a business; it was a religion. He viewed it in its broad social and moral aspects. It saved millions to the State in the prevention of pauperism, therefore it was a powerful factor in social economy. It was a monument to family affection, therefore it conduced to public morals. It was made possible only by family co-operation, by the joining of the many to bear the burdens of the few; therefore, it represented, as did no other institution, human brotherhood. Above all, it rested upon absolutely secure scientific grounds; it was thus a product of human progress in intelligence. Rivalry among companies, except rivalry in best promoting these aims, he detested. He regarded, and properly, the position of a life company as identical with that of a university, an institution engaged, not in money-making, in promoting the private interests of its trustees, but in disseminating public benefits. In his eyes a life-insurance president who used his position for private enrichment should be regarded as would be a university president who speculated with the university funds. He regarded life insurance simply as family protection."

In accident insurance in 1910 two companies of Hartford paid out over two million dollars in losses. One of these companies has over fifty-eight million dollars of assets.

Proper Motions of the Stars

STARS are called "fixed," to distinguish them from the planets or "wanderers," and because they have no evident motion when compared with the sun, moon, and planets. They retain apparently the same relative position, and present the same familiar forms. The Dipper may always be seen in the north, Orion glows in the winter sky, Vega looks down from the zenith on summer nights. The same constellations are always found in the same places at the same seasons of the year.

The stars have a common apparent motion. The rotation of the earth on her axis makes them appear to rise and set like the sun, and the revolution of the earth in her orbit makes them appear to rise some minutes earlier every night. They have also apparent motions due to alterations in the direction of the earth's axis.

Besides their common apparent motion, all the stars have what is called a "proper," or real, motion. In some cases this actual motion has become apparent; the stars whose places were accurately measured hundreds of years ago do not occupy the same places at present, but seem to be drifting away.

A rapid traveler in the heavens is the star of the seventh magnitude in the "Great Bear," known as No. 1830 in Groombridge's catalogue. It is said that it moves about seven seconds of the arc every year, and it is sometimes called the "runaway star." 61 Cygni, in the northern heavens, is a swift traveler, with a drift of some five and two-tenths seconds every year, according to the computation of one authority. The bright star Arcturus is not drifting so rapidly, but, it is said, it has moved more than a degree—twice the diameter of the sun—since the time of Ptolemy.

Our sun is held to be a star with a proper motion, and to be moving rapidly through space, taking the planets with him. He is bound for a point in the constellation Hercules, but the distance of Hercules is so inconceivably great that far more than a million years must pass before the sun can reach the boundary line of the constellation.

How Heat Passes Through Ice

THE rays of heat and of light are quite independent of each other in their ability to make their way through different substances. For example, glass permits the passage of heat rays as readily as it does those of light. If the glass be coated with lampblack it will allow the heat to pass through as before, but the light will be arrested. Moreover, heat and light will pass through water with little loss to either. But if alum be dissolved in the water until the liquid be saturated the light will pass, but the heat will be detained and the water will become warm.

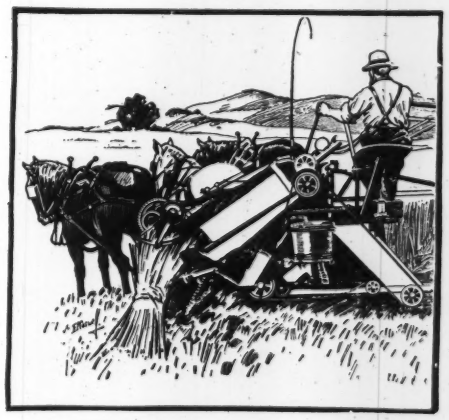
Ice transmits both heat and light with equal facility—that is, it permits their passage through it in proportion to its purity and clearness. An observation made on an iceberg in Baffin's Bay showed very plainly this property of ice.

About half-way to the top several pieces of granite were found, some of which were deeply imbedded in solid ice without any communication with the external air, and these, as well as the exposed pieces, were surrounded by what might be termed an atmosphere of water.

The explanation of this lies in the fact that the heat of the sun's rays passes through the ice and falls upon the stone with the same power it wou'd if the stone were lying on the surface. The heat absorbed by the stone raises its temperature until it is warm enough to melt the ice about it.

The Colors of Balloons

THOSE who have had experience with making and using balloons have come to find that balloons of certain colors are more durable than those of other colors. No explanation for this difference has heretofore been offered. But now a French physicist has solved the mystery in the course of some experiments with the effect of light upon india-rubber. Ordinary light has no effect whatever upon caoutchouc, but ultra-violet rays, those invisible rays from the sun that are found beyond the violet end of the spectrum, have a decided disintegrating effect upon this substance. When a balloon gets up into the sky it is struck by all sorts of rays, and the ultra-violet rays begin to decompose the rubber as soon as they strike it. But if the balloon has a blue covering more of these rays will reach the rubber than if it has a green covering; and if a yellow or red cover is used practically all of the ultra-violet rays will be absorbed and thus the life of the balloon will be prolonged. Thus the gay red and yellow balloons are not only more attractive to the crowd that watches them, but are also more durable than the blue balloons.



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Moving Pictures and Detection of Crime

WHEN the visit of King George to India was decided upon rumors began to reach official quarters of plots against his life and also against the lives of certain reigning princes who have been hated as his vassals. The most serious of these originated in Calcutta and a novel method—first used in Russia—was resorted to to ascertain the names of those who might have knowledge of plots even if not guilty of participation in crimes committed or to be committed. This was to invite a certain number into a tent and give a moving-picture representation as nearly as possible in accordance with the facts as known or suspected. Officials were stationed throughout the audience to study faces for signs of guilty surprise or fear, and those who showed any such signs, or, above all, a disposition to leave the tent, were arrested and subjected to a form of "third degree." It is said that this method was strikingly successful, though it was supplemented by another which was even more effective with the very ignorant. This was to take a figure of wood with iron clamps and a circular disk in the center capable of being manipulated into various shapes. Officials armed deputies with this instrument and went into country districts announcing that it was a famous machine invented by the "Yankees" for the detection of crimes against authority. It never failed to show the guilty. All the officer had to do (he said) was to hold it in his hand and call out certain names, and when it came to the names of the guilty it gave a jump and turned the disk. In a vast number of cases, when the names of those engaged in plots were called, the man or men fell face downward begging for mercy, and the disk jumped as nearly simultaneously as the manipulator could manage—this for the benefit of the onlookers.

The Importance of Snow

IT is said that if all the condensed moisture of the atmosphere were to fall as rain and none of it as snow hundreds of thousands of square miles of the earth's surface now yielding bountiful crops would be little better than a desert. The tremendous economic gain for the world at large that results from the difference between snow and rain is seldom realized by the dwellers in fertile and well-water lowlands.

It is in the extensive regions where irrigation is a necessity in agriculture that the special uses of the snow come chiefly into view. All through the winter the snow is falling upon the high mountains and packing itself firmly into the ravines. Thus in Nature's great refrigerator a supply of moisture is stored up for the following summer.

All through the warm months the hardened snow-banks are melting gradually. In trickling streams they steadily feed the rivers, which, as they flow through the valleys, are utilized for irrigation. If this moisture fell as rain it would almost immediately wash down through the rivers, which would hardly be fed at all in the summer when the crops most needed water.

In all parts of the country the notion is popularly held that snow is of great value as a fertilizer. The scientists, however, are inclined to attach less importance to its service in soil nutrition—for some regions which have no snow are exceedingly fertile—than to its worth as a blanket during the months of high winds. It prevents the blowing off of the pulverized richness of the top soil.

Suicide by Smoking

A MEMBER of the Danish aristocracy who had lost his money made a bet with a friend that he could kill himself within six months by a systematic process of smoking. He stated that, having lived in wealth, he did not care to live in poverty, and as smoking was his greatest pleasure, and one he could not afford to indulge on his previous magnificent scale, if his friend would furnish the cigars and cigarettes he would prove his theory and at the same time die an easy death. His friend, who did not take him seriously, replied that by the time that his system began to deteriorate he would discover that he could not stand the strain. However, he agreed to supply the smoking materials.

The would-be suicide began to smoke fifty cigars and three hundred cigarettes daily until his friend, growing alarmed, called a halt. The other, however, found means to carry out his purpose and at the end of six months died, completely paralyzed, without any suffering whatever, having smoked in the interval of six months more than fifty thousand cigarettes and ten thousand cigars.